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ABSTRACT

The main objective of the conference was to explore methods for close and fruitful cooperation between the region's documentation centers. The conference was held to establish closer contacts between the documentation center staffs, to expand in-service training, and promote information and personnel exchange. The conference is considered to be an initial step toward sincere and continuing cooperation between the documentation centers of Turkey, Pakistan and Iran - countries which have a background of cultural, social and economic interdepedence. Goals to be fulfilled within five years include: giving attention to information scientists' education; preparing a cumulative union list of science, technology and social science regional serials; having short term staff exchanges; holding short term regional seminars; preparing a cumulative union list of science, technology and social science regional serials; having short term staff exchanges; holding short term regional seminars; preparing a common thesaurus on broad subject fields; preparing a regional interlibrary loan code; establishing a Southwest Asian Documentation Center Conference Secretariat; Compiling a directory of regional research institutions and establishing a regional center for duplicate exchange. (Author/NH)

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First

Southwest Asian Documentation Centre Conference

Proceedings

Iran
Pakistan
Turkey

Sponsored by the Central Treaty Organization

April 5-9, 1970 Tehran, Iran

Iranian Documentation Centre
Institute for Research and Planning in
Science and Education

LI 003 398

PREFACE

From April 5 to 9, 1970, representatives of the national documentation centres in Ankara, Karachi, and Tehran met in Tehran for the first time. Their goal was to discuss common purposes, problems and projects, and to become better acquainted. Their success in locating sponsorship, organizing the conference, carrying out the program and planning future projects suggests the recent progress made in Southwest Asian documentation service.

After receiving the initial proposal and outline from John F. Harvey, Akbar Etemad, Director of the Institute for Research and Planning in Science and Education, affiliated with the Ministry of Science and Higher Education, approved it and appointed me Conference Director. One of my first steps was to secure sponsorship by the CENTO Scientific Coordinating Board. This sponsorship consisted of covering expenses of the out of town delegates and securing publication of the proceedings. CENTO and the U. S. Department of State provided an observer from the Smithsonian Institution, Washington, D.C., also.

Sessions opened in the Ministry's Conference Hall on Villa Street and then shifted to the Institute's Conference Room on Iranshahr Street. With this shift, attendence was limited to Irandoc-Tebroc staff members, both due to its purpose as a working conference and the small size of the conference room. However, all of Irandoc and Tebroc's professional and subprofessional staff members were invited to attend as observers since their orientation to documentation centre ideas was still new.

All visiting delegates were housed together in a new hotel to facilitate their informal discussions. English was used throughout the conference. Discussions and certain talks were tape recorded and then transcribed; other talks were written in advance and distributed to the delegates at the initial session. Out of these discussions came the initiation of several new regional projects to improve information service.

The Director would like to thank all persons who assisted in carrying out the conference, from His Excellency Majid Rahnema, to the lowliest clerks. The second conference is scheduled for Pakistan with Pansdoc as the host in early 1972.

Ali Sinai
Director
June, 1970

Complimentary copies of these proceedings can be obtained from the following addresses:

Publication Department, Iranian Documentation Centre, 11-1387, Tehran, Iran.
Pakistan National Scientific and Technical Documentation Centre, 142C, Block 2, Off Allama Iqbal Road, P. E. C. H. Society, Karachi 29, Pakistan.
Turkish Documentation Centre, Bayindir Sokak 33, Ankara, Turkey.
CENTO Scientific Coordinating Board Secretariat, P. O. Box 1828, Tehran, Iran.

Proceedings edited by John F. Harvey, June, 1970
Irandoc Reference Manual Series Number 4

A preliminary summary report on the proceedings of the Conference was issued 17.7.1970 by CENTO (Document SCB/70/2/D7).
Copies can be obtained from The Registry, CENTO, ULUS, ANKARA, TURKEY.

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INTRODUCTORY KEYNOTE SPEECH

by Abdul Rahim Ahmadi

Your Excellency the Minister, Ladies and Gentlemen! On behalf of the Institute for Research and Planning in Science and Education, it is a matter of extreme delight for me to welcome the members of this conference to the opening ceremonies. The Institute, which plans Iranian research and educational change, hopes to expand the services of IRANDOC, one of its primary sections. The documentation centre's purpose is to provide the facilities needed for the preparation, organization, and servicing of scientific material by Iranian and foreign researchers.

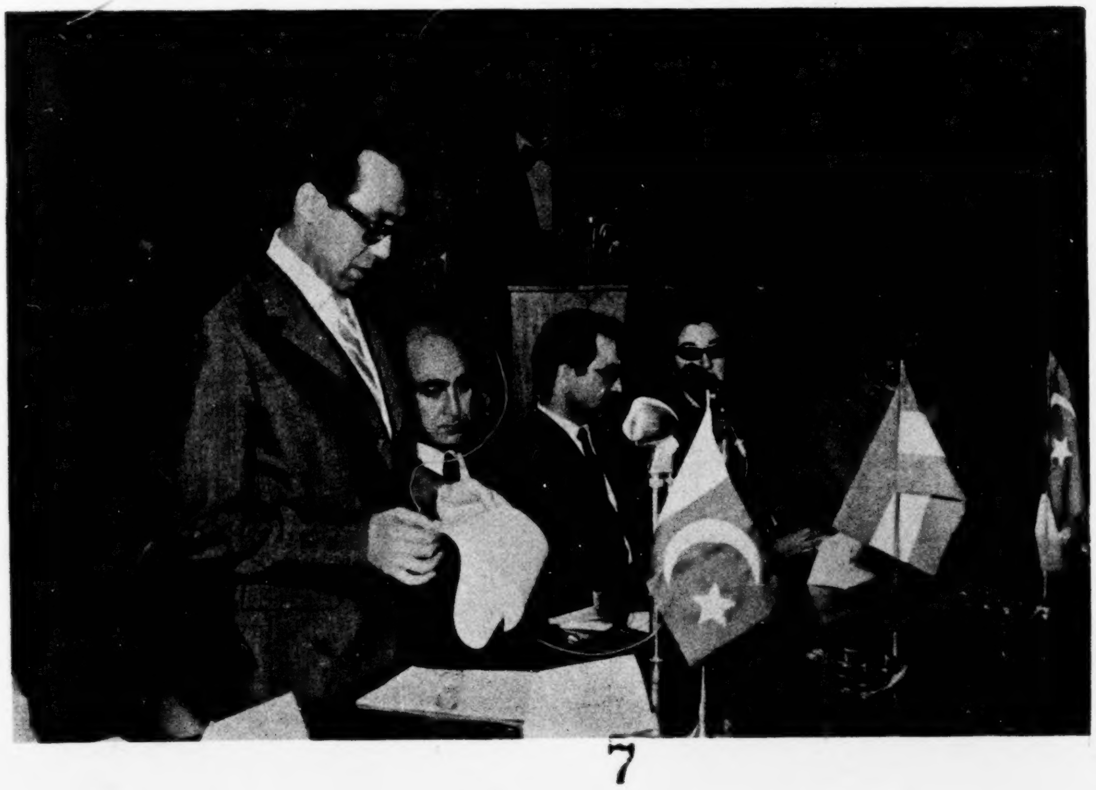
The main conference objective is to explore methods for close and fruitful cooperation between the region's documentation centres. The conference was suggested to establish closer contacts between the documentation centre staffs, to expand in-service training, and promote information and personnel exchange. The participating countries' background of cultural, social and economic interdependence has been a prime reason for convening this meeting, and it is hoped that its deliberations will bear the fruit expected.

Apart from traditional national cooperation, documentation centres all over the world benefit from the work of the International Federation for Documentation. Particularly, with the organization of the Federation's Asian and Oceanic Council, the opening meeting of which will be held next week in Tokyo, hopefully regionwide cooperation will take a realistic and permanent form.

This conference should constitute an initial step toward sincere and continuing cooperation between the documentation centres of Turkey, Pakistan and Iran, and should lay the foundation for common utilization of future scientific and research activities.

H. E. Rahnema at opening ceremony; seated left to right H. Safavi; T. Olgun; A. R. Mohajer; A. Sinai.

Mr. Ahmadi, at opening ceremony; seated left to right H. E. Rahnema; A. Sinai; K. Burian; A. R. Ghani.



WELCOMING ADDRESS

by His Excellency Majid Rahnema

Ladies and Gentlemen! With great delight I open the regional conference of documentation centres by welcoming our guests from the neighboring and friendly countries of Turkey and Pakistan. This conference is another step toward the realization of my country's educational revolution, started by Shahanshah Aryamehr, which led to the establishment two years ago of the Ministry of Science and Higher Education.

Our duties include scientific, research and educational activities as well as preparing plans and programs for science and education progress on all levels, encouraging and directing the spread of individual and collective research, and extending science and technology thru the provision of relevant documents and books for scholars. Since it was necessary that planning activities be separated from executive duties and the education of specialist personnel, the Institute for Research and Planning in Science and Education was started to assume responsibility for educational planning and scientific research expansion. To coordinate science and research promotion and expand the use of scientific documents, IRANDOC and TEBROC were attached to the Institute along with the Centre for Scientific and Educational Policy.

IRANDOC started work in September 1968 to gather, prepare, abstract, analyze and distribute up-to-date scientific and social science information, and to make it available to researchers. By considering the volume of research produced throughout the world, we can understand clearly the importance of such a centre. Today, a researcher cannot rely on his own knowledge and experience, or resort to seclusion and dreams. Scientific research programs, whether on an individual or group level, need access to knowledge which grows on an everincreasing scale throughout the world. Ignorance of such information will isolate the researcher from developments in his own field and prevent him from reaching goals easily reached by others.

What distinguishes ours from past ages is the ever increasing number of scientific and research papers produced, hence the important role of documentation centres, especially in the developing countries. This role is not only useful in the present learned world, but it also contains considerable economic and social advantages as well. First, a rich collection of scientific publications, films, etc., are collected with considerable expense and made available to interested persons. The very existence of such a scientific treasure is tantamount to taking knowledge out of the monopoly of a special group and making it accessible to each studious individual. The increased availability of knowledge is a phenomenon to which due importance should be attached in each developing community. But to me, the most important role of a documentation centre, especially in a developing country, is that of extending the benefits of the research made in progressive countries to our researchers. By this means we can save expenses, develop and strengthen nationally sponsored science, provide the means for genuine research activities, and achieve fruitful results for our science and culture.

Fortunately, IRANDOC, during its short history and notwithstanding its limited personnel and equipment, has made great strides toward fulfilling its duties. Now, with measures taken to improve its facilities and equipment, IRANDOC has made a satisfactory beginning. Also, in view of the need for cooperation with similar centres throughout the world, and especially for deriving sufficient benefit from international sources, IRANDOC has taken steps to establish worldwide liaison. With the use of telex and other rapid communication facilities, shortly IRANDOC will be able to join the world scientific exchange network.

Our deep and lasting cultural and social interdependence with our friendly sister countries, Pakistan and Turkey, requires the development of extensive and multilateral cooperation between the three documentation centers. This cooperation is best carried out within the frame of the Regional Cooperation for Development organization. The present conference is surely an effective step toward this cooperation and toward finding solutions for many of our common scientific and research problems.

I hope that the actions of the three members of the Regional Cooperation for Development, which promise peace and improvement in this part of the troubled world, will cause other nations to follow our example and direct their activities toward promoting the service of science to humanity.

In conclusion, wishing all success to this conference, it is necessary to thank wholeheartedly the CENTO Scientific Secretariat for its assistance in convening it. I hope our guests will enjoy their short stay in Tehran and that in leaving they will take with them, as a souvenir, their success in realizing documentation centre cooperation and a pleasant impression of Iran.

WELCOMING ADDRESS

by A.R. Mohajir

Honorable Minister, Mr. Chairman, Ladies and Gentlemen. Pakistan is very happy to cooperate in social, economic and cultural events and now to add another field in which we can work with our RCD colleagues. We feel that the brotherly ties existing between Iran, Turkey and Pakistan can be of great significance in, the development of area documentation activities. PANSDOC was established in 1957. We are happy to make our experience in documentation available to the other delegates and hope it will be helpful to them.

Documentation is a very important activity in all subject fields. We are happy that IRANDOC is now carrying on activities in both the social sciences and also science and technology. We hope their progress will multiply by leaps and bounds and enable them to serve not only Iran but also Turkey and Pakistan.

Please let me convey our deep appreciation for the hospitality offered to us by the government of Iran and the CENTO authorities. We hope the conference will carry on important discussions and agree on important resolutions for future area programs. Finally, I wish to thank the conference organizers for making such excellent arrangements for our stay in Iran.

WELCOMING ADDRESS

by Kismet Burian

Honorable Minister, Mr. Chairman, Ladies and Gentlemen. On behalf of Turkey, it is my privilege and pleasure to express thanks to the Iranian government, CENTO and IRANDOC for the invitation to meet in this modern and beautiful city and in these excellent facilities. Not only will participants be able to enjoy the conference in comfort, but also they will be able to see the cultural features of the Iranian capital. To all of you I extend the warmest greetings from Turkey. It gives me a great deal of pleasure to come together with my colleagues in order to discuss mutual problems and reinforce the scientific and cultural relationships already existing between our countries. This joint conference is devoted to a very important topic. Ever increasing scientific literature has made information handling a prominent problem and I can only hope that the goodwill and cooperation of Iran, Pakistan and Turkey will help us master it. Further, I hope these discussions will help to define difficulties and locate practical solutions. I look forward to a successful meeting from which all will benefit.

KEYNOTE ADDRESS

by Mervyn Smith

1. The number of papers published in the scientific journal literature and reports issued by national organizations like AEC and NASA and international organizations like IAEA and FAO is fast increasing. Information services the world over are responding to the need to make this material available by using improved communications and technologies such as data processing. In so doing, they are themselves changing and developing new systems.

2. In order to gain access to this material in the Southwest Asian region, the three documentation centres are expanding rapidly. Surely their character will change as they link with overseas systems and grow in size. Their aims differ from those of documentation centres existing in industrialized communities, since they must serve two audiences:

a) The large majority of scientists educated in the region who need information on the range of background material existing and guidance on how to obtain and use it.

b) The overseas educated scientists who have been exposed to, expect, and need a constant flow of up-to-date information.

3. Thus the documentation centres must have:

a) A wide basic collection of background material appropriate to the agricultural and industrial programmes of the region;

b) A mechanism for acquiring current material in a certain number of specialist fields at the leading edges of scientific development; and

c) Capacity for flexible response to changes in the outside world.

4. The burden can be eased by sharing responsibilities. Collaboration between the three documentation centres through pooling their resources and allocating to each centre appropriate specialist roles can be an immensely valuable service to scientific and technological development in the region.

5. Collaboration between regional scientists is essential to promote maximum economic growth and to develop closer ties. This collaboration can grow only if scientists know each other and know each other's work. This is another task which devolves on documentation centres. A start could be made by arranging for material published in the region's journals to be distributed in all three countries in brief form and in a common language.

6. The CENTO Scientific Coordinating Board has allocated £3000 for the year ending 30.9.70 to assist urgent regional documentation plans. It looks forward to practical proposals for using this allocation. The Board also hopes this conference can make a secure foundation for continuing regional collaboration on scientific documentation. On behalf of the Board, I wish to welcome most cordially our friends from Pakistan and Turkey.

THE IRANIAN DOCUMENTATION CENTRE: ADMINISTRATION AND BUSINESS

by Ali Sinai

Short History.--In December 1967, John F. Harvey wrote a proposal for the establishment of an information centre to be associated with the Iranian Centre for International Conferences. The report was prepared at the request of Dr. M. Gangi and Dr. M.L. Smith of the University of Tehran Centre for International Affairs and CENTO, respectively.

The report was presented to His Excellency Majid Rahnema, who became interested in the project and took steps to establish the Centre. Negotiations for budget, staff and quarters began in March 1968. Dr. Harvey and the present writer were asked to make the necessary preparations. In the meantime, H.E. the Minister became interested in another of Dr. Harvey's proposals, this one for the establishment of modern book processing centre, called TEBROC. It was decided that the two centres should be established simultaneously and should work closely together.

In September, 1968, steps were taken to recruit staff and a temporary building was selected. After budget approval, IRANDOC and TEBROC became parts of the newly founded Institute for Research and Planning in Science and Education.

Each department will be introduced today by its head. The Computer Centre and the Administrative Department serve the entire Institute so do not belong to any one of its three centres. At the present time IRANDOC consists of three departments: Research Services, headed by Dr. Daneshi; Publication, headed by Mr. Moradi; and Processing, headed by Miss Etemadi.

Staff.--At the end of the last Iranian year (21 March 1970), the total number of IRANDOC's staff was 76. Of this, eight were part-time abstractors with doctor's degrees in a subject field. We have six professional librarians, six full-time subject specialists with Master's or Bachelor's degrees, eight sub-professionals studying library science at the University of Tehran, two part-time translators, and three full-time editors.

The shortage of qualified personnel is still an acute problem, so several staff members are being trained. The best sub-professionals will become reference librarians after they graduate, others will work in other departments or leave IRANDOC, so the Centre will have an opportunity to recruit other young graduates. The subject specialists are being trained by Dr. Harvey and Dr. Daneshi. Some of them will also attend library school in Tehran or will be sent abroad to study information science. Several sub-professionals are now attending a computer programming class. Their combined knowledge of library science and computer science will be very useful in developing the automation project.

IRANDOC has not been successful in recruiting good science translators. To a great extent this is due to their critical shortage or even complete absence in Iran. Here again, it seems that the Centre must train its own staff members.

Budget.--IRANDOC and TEBROC were fortunate to have an exceptionally large budget during their first 1½ years of existence. In the last half of the year 1347, i.e., October 1968 to March 1969, the total budget spent was 26,000,000 Rials, more than U.S. $349,000. Of this total, more than $100,000 was spent on library materials. In the fiscal year which ended 21 March 1970, the total IRANDOC-TEBROC budget was around 45,000,000 Rials, or about U.S. $600,000, of which more than $200,000 was spent on library materials. The projected budget for the new fiscal year calls for a small increase over the previous year.

In spite of a relatively large budget, difficulties were faced in spending the money, mostly due to administrative and foreign exchange problems. As an example, last year's budget was approved only at mid-year. The present year's budget has not yet been approved. Of course, such difficulties occur for any new Iranian institution.

Equipment.--From the beginning, obtaining and using modern equipment was an important concern. The Centre has been relatively successful in this aspect of its activity. Many electric typewriters, of both Latin and Persian characters, are now used, although experience with the Persian electric typewriter was poor. The Centre possesses one 8mm and one 16mm film projector, one slide and one filmstrip projector. The two dictating machines are used extensively, and by this method messages, letters and notes are communicated to secretaries speedily. Telex apparatus is ready to be installed when a telephone line is available, hopefully soon.

In the reprography section, the Centre has a microfilm reader-printer, which has a growing use, and one photocopy machine at IRANDOC and another at TEBROC are used extensively. The Gestetner mimeograph machine produces about 25,000 pages each month. The Centre's printshop is equipped with small multilith, photographic and zinc-making machines, a cutting and a punching machine. A larger multilith is on order.

Purchase of more modern machines is intended for the new year, including two IBM 72 Magnetic Tape typewriters to be used for computer inputting. Two more microreaders, complete binding equipment, and more electric typewriters are among equipment to be purchased soon.

Questions from the Audience.--Mrs. Burian asked in what way the Centre would use telex. The answer was that the telex would be used for contact with foreign firms and libraries, like the N.L.L. in the U.K.

Mr. Mohajir asked how many photocopies were prepared during the last month. The answer was 500 pages. A large portion of requests for photocopies of social science articles are obtained from Iranian libraries.

IRANDOC'S REFERENCE DEPARTMENT

by M.H. Daneshi

The Reference Department is made up of two professional librarians, eight graduate reference assistants, and four clerks. The reference assistants, who hold degrees in economics, law, physics, biology, medicine, educational psychology, and sociology, also act as subject specialists in book selection and in the compilation of subject bibliographies.

The Reference Department can be divided into two main sections: A research section and a circulating library and reading room. The research section staff compiles bibliographies, answers reference questions, and selects books. The library consists of reading room facilities, a circulation desk, stacks for book and government publications, and is staffed by a professional, sub-professional, and two clerks.

Compiling Subject Bibliographies.--Each subject specialist is compiling a bibliography of the Persian books published in his field. These bibliographies will be published and sold to libraries and individuals. A list of IRANDOC periodical holdings in each subject field is being compiled, also.

When requested by researchers, specialized subject bibliographies will be compiled from IRANDOC reference sources. They will be given to the researcher in the form of photocopies of the relevant sections of indexing sources, or else a separate list of articles will be compiled. Articles not available in Iran are obtained from the National Lending Library for Science and Technology in Britain, and they arrive in about three weeks. However, many articles in social science can be obtained in Iran.

Answering Researchers' Questions.--Since experience shows searches to be made more difficult because the original question was not sufficiently exact, a preliminary interview with the user is useful. For questions sent by post, the research assistant must analyse the question and reduce it to processable form. Where necessary, the question is referred back to the questioner for clarification. IRANDOC has a special form for recording and entering reference questions.

The materials required to answer questions may be bibliographies, books, periodical articles, or statistics. At times we can obtain the necessary information by referring to Iranian libraries or experts. Some requests are demands for specific articles for which we try to obtain photocopies and charge 5 Rials per page. The reference assistants prepare the answers under the supervision of the Chief Reference Librarian and send them out to the questioner.

Book and Periodical Selection.--The reference assistants chose those books, periodicals and audio-visual materials most useful in meeting user needs. Periodicals circulate within the Department for book selection purposes.

Book selection is limited to books, periodicals and audio-visual material in the sciences and social sciences, primarily at the post-graduate level. We try to compile as complete a collection of Persian material as possible. English and French materials are also of primary importance. A large number of slides, films, and filmstrips has been ordered, also.

Establishing a Collection of Iranian Government Publications.--There has been very little organization and planning in the publication and collection of Iranian government reports. IRANDOC is making a strong effort to compile a complete collection of such material and to maintain the only complete collection in Iran. A letter from the Director was taken to all government offices, educational and research institutions to request one set of their publications. Lists were made of the publications received and then the lists were taken to all ministries and government offices again. In this way, any numbers overlooked in the first round were gathered. We have covered nearly all of the Tehran and provincial centres where government publications are issued. In the future we hope to publish the first complete index to Iranian government publications. Coordinated with this program, IRANDOC has collected research reports which will be indexed and published also.

Collection of University Theses.--Collection of Iranian doctoral and master's theses is another project. Until now there has been no general and complete collection. We have communicated with all institutions of higher learning and asked them to provide copies of this material. So far, we have received theses from three universities. Eventually, we will publish an index to this material, also.

Service.--IRANDOC's open shelf collection uses the Library of Congress Classification and has the following sections:

a) Books
b) Reference books (arranged according to each Reference Assistants's specialization)
c) Periodicals
d) Pamphlets
e) Audio-visual material
f) Government publications (arranged according to ministry)

The reading room is open for use to undergraduate and graduate students, faculty members and others from 8 a.m. until 8 p.m. For those persons who wish to become members, a card is issued entitling them to check out material for two-week periods. Periodicals and reference books are not circulated. Where necessary, we will provide photocopies of the relevant sections of books and periodicals.

IRANDOC-sponsored Iranian inter-library loan service is a new project. For fifteen libraries, all inter-library loan requests are processed through IRANDOC, which also pays the system costs, including postage and replacement in case of loss or damage.

THE IRANIAN DOCUMENTATION CENTRE PROCESSING DEPARTMENT

by Parichehr Etemadi

The Department consists of two sections: book processing and serials processing, and the staff consists of 15 full-time people, one professional, six sub-professionals, three clerks, and five typists.

Book Section.--Subject specialist reference assistants select material to build collections on three different levels--college freshman level, college major level, and doctoral level--for different subject fields. Orders are received in many different forms. They are searched to complete bibliographic information and avoid duplication. Then, two cards are typed for each title, one to be filed in the "On Order file", the other to be sent to TEBROC which will order and catalog the book. Urgent material is ordered by air mail. After notification by TEBROC, out of print material is marked "o.p." and left in the on order file. Out of stock material is filed in a separate drawer by date of the next printing and reordered then.

Books received from TEBROC are ready to be shelved. IRANDOC will have a shelf list plus a Series Authority File. The Processing Librarian will decide which subject heading cards to use and whether or not an entry card should be made for a series title. After the shelf list card is filed in the shelf list, the book and catalog cards are sent to the Reference Department. We have about 20,000 books on order now.

Serials Section.--The following major tasks are carried out: ordering, payment, checking-in serials, claiming, gifts and exchange, and binding. Serial selection is carried out by reference assistants. Titles selected are searched and verified for completeness and accuracy. After the bibliographic information is complete a serial order is typed in duplicate and sent to a dealer who will in turn place it with the publisher. A cover page accompanies each order with information about how to fill it. IRANDOC has a different dealer in each of several countries and they carry out much of the order paper work for us. However, certain material is ordered direct, like H.W. Wilson Company and U.S. Government Printing Office publications.

Back journal issues are ordered for certain titles from 1960. However, indexes and abstracts vital in research are ordered from the first volume. We prefer paper copies, but if not available, microfilm. The first copy of the order is mailed out and the second copy filed by order number. An order card for each title is filed alphabetically under title in catalog drawers.

Payment is made in U.S. dollars by UNESCO coupons. When the proforma invoice is received from the dealer the order card and the order record are checked against each other. If there is no problem, then the proforma data is transferred to the order card and UNESCO coupons prepared with a cover page (in duplicate) stating the payment due. The order card is marked "PAID" and the money mailed with payment cover page. The second copy of the cover page is stapled to the order record.

When the first issue of a new journal is received, the package wrapper is kept and the order card pulled out and marked "RECEIVED". A Kardex check in card is made for each title and the needed information inserted in each square. The journal issue is stamped for ownership and date received and sent to the Reference Department for patron and staff use. Microfilms are checked into the Kardex just like paper copies, except by adding "m" to show microfilm. A semi-annual list of IRANDOC-TEBROC serial holdings is published.

Titles received by purchase	1000
Titles received on exchange	60
Titles received by gift	1000
The total number of serial titles	2060

Claiming is done through the Kardex card information. Whenever the check-in girl receives an item and discovers previous issues missing, she informs the claim girl to send out a claim notice. In other cases, claims are made to obtain the proforma invoice or to obtain the first issue of the subscription. A small "c" and date at the very left corner of the Kardex card show that the missing issues have been claimed. The same work mark is added to the order card when claiming for the proforma invoice.

The claim sheet is made in triplicate and in two colors. The first and third copies are white and the second copy is yellow. The yellow copy is used for the second notice if needed. The third copy will be kept for our file, while we are waiting for the missing issues. Claim notices are sent to the publisher no matter whether we ordered the serial direct or through a dealer. In case we have received neither the proforma invoice nor the journal, then claim notices are sent to the dealer.

Application for gift material is made in duplicate, one copy sent to the institution, one copy filed with exchanges under order number. An order card is made with order number and interfiled with other serial order cards. If the order is confirmed by the institution and we receive the journal, then the process is the same as for paid serials. We send an acknowledgement note when we get the free publication for the first time.

We have exchange relationships with 152 institutions. From some of the institutions, like the United States Book Exchange, we receive exchange lists regularly and check the items needed. Normally we pay the postage for the material received. For each title we make an order card and an exchange number is assigned, and order cards are interfiled with serial orders, but order letters are filed in a separate file called "Exchange". When the materials are received the same procedure is followed as that for a subscribed serial. For regular exchanges we make the order in duplicate copies, give a number to it and process it like a subscribed order.

When an institution requests an exchange relationship with us, a Kardex card is typed under the publication title and the requesting institution listed there by code. If the material is ready to be sent then the information is given on the card, a check mark put against institution's name and the material sent by ship. If the requested exchange material is available, a Kardex card is made for it, and the requesting institution listed by code, so the card record will be ready for the mail when the material is available. There is also a guide card under the code for each institution which gives the complete mailing address.

Our new policy is to compile a union list of duplicate serials available from several Iranian libraries, duplicate it, and send it out to libraries for exchange. The materials will be mailed directly from the owner library to the requesting library. We have made arrangement to collect the duplicates of various libraries, use whatever we need, and put the rest on the exchange list. We have completed our own first exchange list of IRANDOC duplicates and have mailed copies to universities and libraries in Iran and abroad.

We send a journal to the bindery when a volume is complete, the index and the first issue of the next volume received. We use a local hand binder, who does slow but satisfactory work. Normally full buckrum binding is used, but for popular or rare materials half/full leather is used. We send out 100-150 volumes at a time to be bound. There is always a waiting list for binding. All the instructions necessary for binding are given to the binder and he makes a dummy spine for each new title. When the spine is approved, he does the whole binding.

Five Year Plan.--Since Iran needs IRANDOC's services immediately, IRANDOC should grow rapidly and become a well rounded documentation centre. Since the Processing Department is of primary importance to IRANDOC, it should accelerate the processing of materials and become completely modern. The unprecedented growth of Iranian libraries coincides with a serious shortage of library personnel. For example, in the Serials Section, the increase in titles and types of publicaton causes overwork. Lack of adequate staff to record and process serials, and the difficulty of keeping accurate records will force us to design new methods to solve these problems.

IRANDOC should adopt modern mechanical and electronic equipment and systems since they will be very useful at this critical period in library development. Automation can be used in all library departments. In order to show the feasability of automation, eleven ways in which machines can be used are given here:

1. Production of serial book catalogs arranged in any of several ways.

2. Control over binding lists.
3. Automatic claiming systems.
4. Elimination of serials checking-in in department libraries.
5. Production of want lists indicating the gaps in the collection.
6. Up to date information on the library's serial holdings, daily, weekly, etc.
7. Correct billing and accounting records.
8. Compilation of statistical reports.
9. Ease of changing records.
10. Increased accuracy and reliability of records.
11. The satisfaction from meeting a challenge and developing new and better ways to do a job.

Questions from the Audience.--Mrs. Burian asked about the payment of bills and Mr. Sinai stated that invoices were paid by UNESCO coupons, but he also explained several difficulties. Since the Iranian quota is very small, the Centre has had to write UNESCO about the problem. $200,000 in coupons was obtained and used. Next year, the Centre plans to use both UNESCO coupons and bank payments.

THE IRANDOC PUBLICATION DEPARTMENT

by N. Moradi

The Iranian Documentation Centre Publication Department started its activities in the Autumn, 1969. IRANDOC has two types of publications:

- Internal publications
- External publications

1. Internal publications are intended to assist in training personnel. Examples are A Guide to Farsi Writing Techniques, Let Us Protect Farsi, and Selection of Books for Scientific Libraries.

2. External publications are of two types:

A. Periodicals. The publications prepared and published for scientists and researchers are the following:

1) IRANDOC Science and Social Science Abstract Bulletin. This bulletin abstracts articles appearing in Iranian periodicals. It is published in two languages, Farsi and English. The first number was published in the Winter, 1969-70, and contained the abstracts of 150 articles. 3000 copies were printed. Articles were selected for abstracting with the beginning of Spring, 1968. Future issues will cover 1969 and soon publication will be up to date. Although abstract bulletins are always published sometime after publication of the original article, IRANDOC is trying to reduce this time gap to the smallest possible number of days. Each issue will contain the abstracts of the articles which appeared in a

specific time period. We are attempting to use the latest techniques in selecting articles and preparing abstracts.

The abstracts are arranged in alphabetical order by author or title under each of the major branches of the sciences and social sciences. Three numbers are attached to each abstract. The first number to the right is the serial number of each abstract, the second number is the serial number of each abstract journal issue, and the third is the year in which the journal is published. For example: 48-1-25 means the 25th abstract of the first issue of the year 1348.

In the article citation, the author's name is written (if there is an author), then the article's title is given. If the article is a translation, the translator's name is added, too. Then the periodical's title, volume, date of publication, issue number and pages are given.

Abstracts of those articles originally written in Farsi are translated into English and issued separately. To facilitate reference to these translations, their numbers are added at the end of the Farsi abstracts. For example, Eng. 12 may be listed in the Farsi bulletin, and parallel to it at the end of the English translation, the number of the Farsi text is given, for example F. 12. To facilitate reference to the abstracts, there are author and title indexes at the end of each issue. An annual subject index and an index to the publications abstracted will appear in the last issue of each volume.

2) Contents Pages in Science and Social Science. The first issue of the contents pages bulletin was published in September 1969. The first volume of seven issues to the end of the Winter 1970 contains 414 contents pages. This periodical is printed in 2000 copies, most being sent to libraries and universities in Iran, but 150 sent to centres abroad.

3) The following periodicals will be issued by IRANDOC in the near future:

a. A weekly IRANDOC abstract bulletin reporting the books and other material received and cumulated quarterly.

b. The Union List of Science and Social Science Serials, which will contain all journals in any language issued at any date which are found in Iranian libraries. It will be published in the Summer 1970, and will be revised annually.

B. Books.

1) The following books have been published and distributed:

a. A Directory of Iranian Periodicals, compiled by Pouri Soltani. It contains the following information on 244 periodicals published in 1968: type of periodical, founding date, subject matter, proprietor, editor, frequency, subscription price, language, affiliation, address, and telephone number. It was printed in 500 Farsi copies and 100 English copies.

b. A Directory of Iranian Newspapers, compiled by Parvin Aboozia. It contains the following information on 122 newspapers published in 1969: founding date, frequency, proprietor, subscription price, address, affiliation, and telephone number. This directory was printed and distributed in 500 Farsi copies and 100 English copies.

2) The following books will be published soon:

a. A Directory of Tehran Province Libraries, compiled by Nasrin Tajadod. It will contain the library's name, address, telephone number, name of director, opening hours, number of books and other printed materials.

b. A Directory of Tehran Province Librarians, compiled by Faranak Farnia.

c. A Directory of North East Iranian Libraries, compiled by Fereshteh Razavi. It will contain information on the address, telephone number, name of librarian, number of books, periodicals and manuscripts, annual budget, opening hours and number of users.

d. A Directory of Central and Southern Iranian Libraries, compiled by Abdolhossain Tabatabai.

e. A Directory of Iranian Bookstores, compiled by Mohammad Ali Memar Sadegi. It will contain information on name and location of bookstores, type, language and subject of the books sold.

f. A Directory of Iranian Reference Books, compiled by Qulam Hossain Tasbihi. It will contain the titles of encyclopedias, general information books, annuals, calendars, directories of scientific institutions, statistics, bilingual or multilingual dictionaries, glossaries of special terms, lists of names of certain books or persons, dictionaries of local accents, biographies, dictionaries of geography and history, atlases, general and special bibliographies, catalogs of libraries, indexes of articles and proverbs.

g. A Directory of Approved Iranian Library Regulations, compiled by Fereshteh Anvar.

Altogether the Publication Department has published 12 books and journal issues for external distribution and 7 internal publications.

Questions from the Audience.--Several problems of IRANDOC's Science and Social Science Abstract Bulletin were brought up. Mr. Moradi stated that the English translation of these abstracts was not ready, due to the shortage of science translators. He also said that the abstracting rules were adopted from those of other abstracting services. There is no abstracting manual in Persian, and even the NIOC Scientific and Technical Information Section uses an abstracting manual written in English.

Mrs. Burian asked if the Contents Pages and Abstracts were not a duplication of each other, and Mr. Moradi stated that the Contents Pages was a throw-away kind of publication but that the Abstracts would be kept for further reference.

THE IRANDOC-TEBROC AUTOMATION PROGRAM

by John F. Harvey

In libraries and documentation centres, automation is an old idea, such devices as telephones, typewriters, and duplicating machines now being widely accepted but once having been new, expensive and exciting. No doubt libraries have lagged behind corporations in adopting automation, but they are now moving ahead rapidly. Electric and mechanical devices of several kinds are being used, from electric erasors to computers and facsimile transmission.

In the United States, Canada, and Great Britain, automation is revolutionizing library policies and procedures. Experimentation with advanced forms of automation has started in many other countries, also. In Iran, we have been preceded in library computer use by the National Iranian Oil Company which started four years ago in cooperation with the American Petroleum Institute, to plan its petroleum information project. The Iranian Documentation Centre and the Tehran Book Processing Centre expect to use many kinds of automation, and this paper will discuss four aspects of their program--assumptions, goals, plans and progress.

Assumptions.--Several preconditions and assumptions are inherent in IRANDOC and TEBROC automation use. First, both western service goals and financing which approaches the western level are being used. This may set them apart from many Asiatic book centres with lower service goals and more modest financing. The service goals are characterized by speed and completeness. IRANDOC and TEBROC seek to respond quickly to appeals for assistance and to provide material not only from Iran and Southwest Asia, but also from American and European data banks. The assumption is made that scientists and social scientists need and want excellent service. Financing is inadequate to provide this, but probably is larger than that of many other Asiatic book organizations.

IRANDOC and TEBROC are also attempting to launch several programs seldom found in connection with Asiatic documentation centers: a large national research library with major collections in social science and technology, a national book processing centre, a major publication program of directories and serials, a national union catalog, selective dissemination of information service, and national library development planning service.

A basic assumption is that large quantities of information will be processed in the future, that the data bank will be of considerable size. In a few years the annual level of bibliographic titles received in abstract, index or computer form, should reach well over one million items. Also, there is the assumption that the need will arise of providing bibliographic information in a form standardized and compatible with that used by other modern information centres. Requests have already come to provide service for the Library of Congress and the National Library of Medicine, organizations which soon will prefer to receive bibliographic information in computer tape form.

A further assumption is that IRANDOC-TEBROC will eventually fit into a compatible on-line computer network covering the entire Southwest Asian area with connections to Europe and North America. This network will provide the opportunity to scientists in all network countries for daily use of each country's data bank. Reference queries will be answered with broadbased literature searches yielding abstracts, bibliographic citations and air-mailed photocopies made available throughout the area. Eventual cooperation will also encourage publication of a bulletin combining the abstracting and indexing of several countries, thereby enabling Southwest Asia to make a greater contribution to information retrieval in Europe and America.

Of course, another assumption relates to the climate of opinion in the Iranian government toward automation and the replacement of people by machines. Since several government computer centres exist now, and the number is growing, the trend seems to be in our favor. Further, IRANDOC and TEBROC, with their advanced information transfer ideas, are seeking establishment in a government setting where even moderate library ideas are not necessarily understood and approved. To attempt to bring Iran

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into the 1970's, without first getting all other government libraries out of the 16th century, may be difficult, but we assume it can be done.

Finally, it should be understood that automation is considered a means, not an end in itself, and is one of many tools used to achieve goals.

Goals.--The goals of automation relate closely to the larger goals of the two organizations themselves. IRANDOC was established to provide modern rapid and complete reference and publication service for scientists and professors and to use information collected from the entire world. A large book and serial collection will be acquired, and intensive, personalized and extensive service given in cooperation with other libraries and documentation centres. IRANDOC's goals are similar to those of other Asiatic national science documentation centres, but it plans to use more automation in reaching them. TEBROC, the sister organization, will provide commercial book acquisitions and cataloging service for Iranian libraries of all kinds. On request, it will also select books and provide consultant service to ministries, universities, and libraries. TEBROC is believed to be the only organization of its kind in Asia, though the United States has many like it. Both organizations seek to maximize efficiency, output, and service, and to minimize cost and organizational detail by using the most modern policies and practices.

In pursuing these goals, automation will be helpful in at least three areas: improving administrative control over the organizations, improving service to users, and saving manpower and money. These areas are important to us in this order.

Administrative control is the area in which automation will be most useful. This means improving the accuracy and completeness of the statistical information on current operations made available to administrators. With improved information on the flow of cards and materials and their financial implications, decisions can be based on facts rather than guesses. In scheduling and controlling work flow, for instance, the daily reports of the number of order cards searched will assist in projecting the work load to be expected in the order form completion section. And in scheduling binding shipment, automation will provide daily reports of the titles for which volumes are complete. Payroll calculations and inventory control records will be handled easily. Book purchase and circulation records can be controlled and full statistics collected easily. Searching to prevent duplication of material already in the collection or on order can be performed much more accurately and quickly by computer than by manual methods. With automation, lists of books on order, cancelled, received and charged out can be made easily. Finally, budget control will be tightened thru daily financial analysis.

Automation can improve service, also. This is the second area of interest, and one very important, since Iranians wish fast service and modernization. Selective dissemination of information service can be provided efficiently with these tools. As you may know, in such a project, the descriptors reflecting the subject focus of a particular group of researchers will be compared with the descriptors assigned to incoming serial abstracts and books. Then, from the resulting matches the research team will receive abstract photocopies. In this and other retrieval projects, accuracy, completeness and speed are improved by automation. Literature searches can be conducted and bibliographies produced more quickly and more comprehensively. In addition, union catalog card information can be stored and the printouts used as the basis for a book catalog with wide distribution to other libraries and documentation centres.

Certain auxiliary devices will increase the usefulness of the basic computer equipment and contribute toward improved service. A remote input-output terminal, usually in typewriter form, can be installed in a provincial research institute information centre to provide direct service from IRANDOC-TEBROC. Queries can be asked and answered, quickly and in typed form. Before installing a computer in-house, IRANDOC-TEBROC may connect such a terminal to a government or commercial computer centre for service at a modest rental. Once properly programmed, an optical scanner will permit inputting directly from document to computer tape without manual intervention. It will read information from title pages, thereby speeding up inputting and eventually saving catalog department and computer centre salaries.

In addition to the computer and its auxiliary equipment, other devices will also improve service. Electric typewriters will produce more attractive copy with more carbons of catalog cards and letters. The IBM Selectric permits quick type face changes and the IBM Executive permits proportional spacing. Ultimately, inputting directly from an electric magnetic tape typewriter may be possible. This will speed service and permit economies thru by-passing the key punch typist and computer operator.

Faster service will be provided when facsimile transmission to provincial university centres is introduced. In an hour, this machine will provide a paper copy of a journal article for the Shiraz researcher. Dictating machines will speed up literature searches, and photocopies will provide inexpensive paper lifesize copies of a mailable journal article quickly, with no special reader needed. Computer searching for duplication and for document retrieval is much faster and cheaper than human searching and that is true also of the original literature search and write up by dictating machine.

The third area of automation interest is economy, and several examples have already been mentioned. Certain kinds of automation will save money and manpower, such as dictating machines and electric magnetic tape typewriters, though others will not. Particularly in its early stages, the cost of hiring inputting computer personnel may rise, though acquisitions and cataloging staff costs may be reduced.

In many countries, service in university and government computer centres is readily available and at low rates. The documentation centre need have no equipment or staff, its only expense covering programming, punching and brief running time elsewhere. Also, a start on computer use can be made by renting a key punch and card sorter for input and simple sorts in-house. Therefore, the cost of computer service is seldom a good reason for a government agency to avoid it.

Plans.--In the original IRANDOC-TEBROC plans, automation of several kinds was suggested. The concepts being employed were explained fully to Minister of Science and Higher Education Majid Rahnama, who established the centres, and to the directors of the Institute for Research and Planning in Science and Education, of which the two centres are part, and all of these officials have accepted them.

The full scale automation study and plan which might be expected to precede computer automation has been done only in very brief form. Such projects as the construction of a mathematical model or a simulation study of the operation seem also beyond staffing possibilities.

IRANDOC-TEBROC plans to introduce automation gradually. First come simple devices for all departments, such as electric typewriters and dictating machines, then more complex devices. Computer use will be introduced, section by section, though several sections will not be assisted for several years since the technology in these areas is developing slowly. Eventually, auxiliary devices will assist the computer and improve service.

Two of the first steps in the automation plan call for goal establishment and for a complete procedure analysis of all departments. Goals should be sufficiently realistic and objective that the success or failure to reach them will be easily identified. The procedural analysis will enable administrators to see on paper just how every routine is carried out by each staff member. After careful study these routines will be revised, simplified and made more compatible and efficient. This is the systems approach, in which the entire organization is programmed to perform every task only once and to recognize fully the dependence of each unit on every other unit. This analysis will yield a procedure manual and charts showing work flow in every department, useful in orienting staff members.

When the procedural analysis and flow charting phase is completed, then we can produce and use machinable information. Bibliographic data useful in acquisitions, cataloging and reference can be key punched first. Serials key punching can be performed separately because the data overlap very little with book data and the order routines are separate. Finally, circulation control can follow since it depends on the records produced for acquisitions and cataloging.

Bibliographic records will be punched in MARC II machinable form, thereby making them compatible with Library of Congress cataloging service tapes. This standard will be used internationally in producing such records. Literature searching and print-out bibliographies can be produced by either manual or automated methods.

A card will be punched for every book which IRANDOC or any other library or documentation centre orders thru TEBROC. Such punching may be initiated by IRANDOC-TEBROC or by another library. The punched cards will be searched against the existing data bank. If not duplicated, the bibliographic information reflecting previous experience may be useful in ordering, for instance, in filling out addresses, or identifying out-of-print titles. Or if duplicated, the order can be cancelled. Many other uses can be made of the information on each order, for instance: (1) Average book prices for budget projection, (2) Work load in each processing sequence stage, (3) Fiscal year financial encumbrance and amounts paid each publisher, (4) Invoices of amounts owed by each TEBROC customer, and (5) Subject lists of material on order.

Acquisitions information on orders placed and material received will be key punched, then passed to the Catalog Department for correction and amplification. From the Catalog Department, the bibliographic data will go to the Union Catalog for permanent storage in a printed book catalog, on computer disc, and printed catalog card form. Then IRANDOC will use these data collections for literature searches and document retrieval.

Regularly, the IRANDOC-TEBROC Publication Department will produce abstracts covering Iranian science and social science literature. This material will make up the second data bank. The IRANDOC Science and Social Science Abstract Bulletin has just been born, and will eventually cover all Iranian periodical, continuation, document, standard and report literature. Abstracts will be translated into English, key punched for disc storage, and published in paper journal form. Basically the same thesaurus will be used in indexing both sets of data--covering Iranian and foreign books and Iranian serials--to be searched for any patron.

A third type of computerized data bank will cover foreign abstracts and books and will be purchased from foreign publishers and information centres, e.g. Chemical Abstracts, Biological Abstracts, Library of Congress MARC tapes, British National Bibliography, from Telaviv, Murray Hill, and other documentation centres. When tapes are produced in Karachi and Ankara, Cairo and New Delhi, Bangkok and Djakarta, they will be sought for our data bank. Undoubtedly, the data banks must be subject and author indexed uniformly for maximum usefulness. Since computers are in widespread library use many programs are available and can be adapted for IRANDOC-TEBROC.

It should be clear that document index numbers and abstracts and not the original information itself will be stored and retrieved. With these index numbers the document can be located on a shelf or in a microfilm storage cabinet and information retrieved from it. Information retrieval will come eventually but only document retrieval is practical now.

Progress.--The previous sections of this paper should have provided an idea of the automation goals and plans of the Iranian Documentation Centre and the Tehran Book Processing Centre. Like most of our plans, they are ambitious. And as might be expected in a government organization, progress has been very slow. Plans have been developed far ahead of the capacity to carry them out. As pioneers--several of these goals have never even been discussed before in Southwest Asia--slow progress should be expected. Many of IRANDOC-TEBROC's goals are new to the computer, administrative, and library staffs in Iran, so all must be educated before progress can be made.

Short of the computer, several kinds of hardware have been acquired, as summarized in Mr. Sinai's talk.

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Of course, long distance telephone contacts can be made around the world, thanks to the Cento microwave relay system. Thru telex, each of the RCD capitals--Ankara and Karachi--can be contacted in a few minutes, and if PANSDOC and TURDOK have access to telex, a direct request can be made to them in writing. Progress with facsimile transmission awaits further hardware experimentation and improvement abroad.

Without working extensively thru any of them, discussions have been held with four local computer centres. However, computer progress has been very slow. One centre has inadequate manpower and the hourly charges of another seemed forbidding, though it has been helpful in offering several kinds of free service. One of the two organizations with which we have dealt is the Iranian Census Bureau Computer Centre, with an IBM 360-30 computer plus a large programming staff. Procedural analysis has been discussed with this group but has not yet been carried out. The other centre is the Industrial Management Institute, a subdivision of the Ministry of Economy, which has just installed its own small IBM 1130 computer. They have programmed the Iranian Union List of Serials for which printouts are available. Since these data were available and relatively unrelated to other data, this list was started, to some extent as a pilot project. It is scheduled for updating every other year, but the first edition has already taken one year without being completed. Detailed planning for key punching the National Union Catalog has started with programming to follow soon. One programmer was hired, but eventually transferred to other tasks. Another has recently been hired part-time. Several budgeted positions exist for computer centre employees in the parent Institute. However skilled and experienced programmers are scarce and expensive. So are competant indexers and abstractors. It may be several years before we solve staffing problems in these areas. Training our own staff will be the only satisfactory solution.

With our slow progress toward the goals described in this paper, the questions may be asked, if the goals are realistic, and further, what the target dates are for achieving them? The answer to the first question might vary from person to person. While the technology now makes all of the plans practical in Iran, and in fact, advanced information transfer techniques are being used elsewhere in the Iranian government, our ability to convince budgetary and administrative authorities to support them, and our skill at wending our way through the red tape leading to them, are yet to be proven.

As for target dates, none have been established. The do-everything-first approach has been used with some success in moving forward quickly in several fields. However, the completion of the Union List of Serials pilot project and the start of systems analysis--which form the initial portion of the automation program--have been delayed past any reasonable target date. Obviously, the middle and later portions await completion of the initial portion. While no target dates have been established for them, certainly we should be moving into these areas soon. Probably, the acquisition of an Institute computer centre is several years off, and the use of facsimile transmission and other sophisticated devices a decade off.

However, we remain optimistic. Several miracles have been performed to get us this far, and if we can only be patient, our automation goals are sure to be reached.

Questions from the Audience.--In answer to Mrs. Burian's question about the need for a computer, Mr. Harvey stated that there was no need for one at the moment but that heavy need for one would soon develop. Scientists and research workers need quick and accurate answers from a large data bank.

THE TEHRAN BOOK PROCESSING CENTRE

by Abbas Mazaher

The Tehran Book Processing Centre was established in 1968 to provide book acquisition and cataloging service for Iranian libraries. Starting with two professional librarians and a small number of clerical staff it has now expanded in size to include ten professionals, twelve sub-professionals, and a large number of non-professionals, all trying to make their experience and services available to Iran's developing libraries. The entire nation is served. TEBROC activities are performed through the following departments:

Planning Department.--Consisting of a small number of experienced professionals, this Department provides library counselling service covering the location, equipment, facilities, material and organization of libraries. Experts are sent to visit the requesting library where consultation is held with responsible authorities and the necessary advice given. This is followed by a written report to the authorities soliciting advice.

Acquisitions Department. -- Through collecting and maintaining bibliographies, book reviews and publisher's catalogs, this Department selects and orders books for Iranian libraries in all fields. Dealing with publishers and well known book wholesalers throughout the world, it secures good discounts and quick service. However, TEBROC accepts acquisition orders from Iranian libraries only on the condition that TEBROC catalog the books before delivery. The applicant library must sign a service tariff giving charge rates for specific types of service.

Cataloging Department.--Here, the most recent and thorough cataloging and classification policies and procedures are followed. The Anglo-American Cataloging Rules are used with Persian adaptations and Library of Congress, British National Bibliography, and TEBROC Persian printed cards are provided for Iranian libraries. The Library of Congress List of Subject Headings and Sears List of Subject Headings are used. The customer has a choice of Library of Congress or Dewey Classification systems. Also, book pockets, charge cards, date due slips, book plates, identification stamps and clear plastic jackets are prepared to enhance book appearance and increase durability. Books are delivered to the library ready to circulate, with catalog and shelf list cards ready to file.

Miscellaneous.--Among other services TEBROC gives training to librarians and library assistants willing to learn modern book processing techniques. It also attempts to introduce standard library equipment to libraries. The organization serves also a teaching function since its senior staff members offer courses in the University of Tehran Faculty of Education Department of Library Science.

Current Projects.--TEBROC has established the Iranian National Union Catalog of library holdings and will publish it in book catalog form. This catalog will be useful in facilitating the exchange of knowledge and inter-library loans between individuals and institutions. TEBROC hopes to publish a comprehensive directory of international publishers, also.

Questions from the Audience. -- Mr. Mohajir asked whether or not TEBROC trains librarians. Mr. Mazaher stated that the University of Tehran Department of Library Science does so. However, certain of the courses are taught at TEBROC and a few students are given their internship there. Also, he pointed out that many of the thirty graduates are already teaching for the Ministry of Education and it is difficult to transfer them elsewhere.

A question was raised about the Acquisition Department and Mr. Mazaher stated that the Centre had three major customers and a few minor ones. We expect to build up the clientele in the future. He also stated that there is a small charge for classifying books. One advantage of ordering books through TEBROC is that all cataloging services are performed before delivery to the customer.

THE PAKISTAN NATIONAL SCIENTIFIC AND TECHNICAL DOCUMENTATION CENTRE AND ITS ACTIVITIES

by A.R. Mohajir

Introduction.--In 1956 the Pakistan Ministry of Education requested a UNESCO survey of the need for documentation service. The adviser toured the country, met scientists, assessed the need, and was convinced that Pakistan, where scientific and technical activity was in its nascent stage, required a scientific and technical documentation centre. Besides, scientific libraries were poorly stocked and hopelessly organized. Therefore, a documentation centre was essential to fill the wide gap existing between the scientist and his literature.

In the middle of 1956 the Pakistan government received UNESCO's recommendations and immediately requested UNESCO technical assistance in establishing a documentation centre. A UNESCO adviser arrived in January 1957 to implement the project. On his recommendation, it was transferred from the Ministry of Education to the Ministry of Industries, and then to the Pakistan Council of Scientific and Industrial Research (P.C.S.I.R.). This was done because the body dealing with scientific and industrial research planning was PCSIR. As soon as the project was transferred, PCSIR acted with great speed. In March, premises were rented, a skeleton staff recruited, and in June services were started. Soon, two additional UNESCO advisers were added, in the fields of scientific and technical translations and document reproduction. UNESCO technical assistance continued until December 1962. The PCSIR was very generous in allocating funds for Centre development as a result of which it became one of the leading Asian documentation organizations. The Centre has a central office at Karachi and regional offices in Dacca, East Pakistan and Lahore, West Pakistan.

PANSDOC Structure.--PANSDOC serves several aspects of scientific information. Its five major divisions are: Documentation, Bibliography and Abstracting, Translation, Data Processing, and Document Reprography.

Documentation Services.--This division is charged with various activities. It manages the whole process of scientific information and acts as central registry for orders received from scientists and technologists. Once orders are registered, they are checked and verified for correctness of bibliographical detail before being processed for procurement. Procurement activity is divided into two groups: those orders available within Pakistan and those which must be procured abroad.

For the latter group, orders are placed with various organizations. Normally, a reference is procured from the country in which it was published. This saves time and postage. The time lag between placing orders and receiving them varies from six weeks to six months. Certain foreign suppliers are quite slow. If rush service is requested, charges become prohibitive. Therefore, the time required is one of the greatest difficulties in foreign procurement.

Regarding local procurement, PANSDOC has a current record of periodicals available in various cities, the "Union Catalogue of Scientific and Technical Periodical Holdings in the Libraries of Pakistan". Once a document is located, it is procured within a week and sent to the customer.

Apart from locating the document, the Division prepares all statistical records pertaining to documentation activity. Its officers provide information regarding the whereabouts of documents, journal exchanges, contact service, and answers to telephone inquiries. Junior officers check the microfilms, photocopies, patents, etc., received from abroad, make proper entries, and supervise all operations until documents are despatched to scientists. About eight thousand orders are received each year, with 20% available in Pakistan.

Bibliography and Reference Division.--This division deals with bibliographic work. Bibliographies are prepared, both on request from clientele and on documentation centre initiative, on problems of general national interest. Also references are supplied on telephone inquiries. A scientist may request references on a special research and development project. A working list will be prepared for him by scanning the world literature and each reference will be examined for its relevance. The Centre has prepared seven hundred bibliographies consisting of thousands of references. Their subjects have covered all the basic sciences and a large number of applied and technological subjects, from nuclear to engineering sciences. A PANSDOC bibliography list is published in the first quarter of every year and distributed free to research workers. Special attention is given to material of national interest.

An annotated analytical bibliography is under preparation in several volumes covering one hundred and fifty years of scientific and technical research literature published in the areas which now constitute Pakistan. This is a unique effort and nearly 70,000 references have been collected from sources within Pakistan, India and the U.K. Another project sponsored by CENTO Scientific Research Funds is "A Bibliography on the Medicinal Plants of Pakistan and the Region". This publication will be useful in indicating the work done on medicinal plants, a great source of wealth in any country.

This division has published a number of comprehensive and useful bibliographies, e.g., "Rauwolfia" (2,000 references), flood control (2,000 references), sprinkler irrigation (200 references), salinity and water logging (100 references), Chinese medicine and indigenous medicinal plants (100 references), East Pakistan geology (100 references), etc.

Sometimes problems requiring bibliographical references are distributed to the two regional PANSDOC centres and they are allowed to explore the reference material available in their regions. Consequently, PANSDOC can prepare a comprehensive bibliography.

Abstracting and indexing services are offered thru the Pakistan Science Abstracts. This is a quarterly publication covering all the material published in one hundred and twenty Pakistan journals. It informs scientific workers at home and abroad about research being conducted.

Indexing Pakistan names presents a problem. The Centre is continuously standardizing and improving their indexing. Indexes comprising both names and subjects are prepared for such publications as the Directory of Current Scientific Research Projects, Pakistan Science Abstracts, The Catalogue of Microfilm Holdings of PANSDOC's Library, etc. Periodical indexing has recently been started also. The indexing of patents and standards requires special attention and PANSDOC wishes to extend its cooperation to the Pakistan Patent Office and Standards Institute.

Data Processing Division.--In April 1969, the Centre received modern data processing equipment consisting of card punch, verifier, interpreter, sorter and tabulator. In June 1969, subject and name indexes were compiled mechanically on the tabulator. Efforts are now being made to publish the scientific abstracts through use of the data processing machines. This activity is new to Pakistan and will provide quicker and more efficient service.

The Selective Dissemination of Information (S.D.I.) System has been introduced. For this purpose user profiles were drawn up and literature collected to meet user interests. The latest periodical information is processed for use by scientific workers. The information is used further when preparing special bibliographies.

PANSDOC is much interested in the rapid dissemination of scientific information and now emphasizes INFORMATICS, a new discipline. The number of multidisciplinary and complex problems is growing and, therefore, up-to-date methods for dissemination and retrieval of technical information must be developed. The Centre has embarked on the mechanization of scientific information activity. Countries like Iran, Pakistan and Turkey could pool their resources and develop mechanized information systems, create information retrieval languages and construct common thesauri. This could become a productive field of collaboration and PANSDOC could make a useful contribution to it.

Document Reprography Division.--Reprography services are the best in Pakistan. The Reprography Division is equipped with microfilming, photostating, photocopying and photo-litho-offset printing machinery of the latest type. Major equipment like Recordak industrial microfilm cameras, lumoprint automatic copying camera and film copying equipment, electronically controlled photostat machines, xerox plate-making equipment, Leitz automatic photo enlargers, Langham colour photoflash unit, Zota print litho-offset printing machine, Varitype composing machine, optype, and many other pieces of equipment are available.

Microfilm received from abroad is photocopied and sent to scientific workers immediately, and Pakistan books and journals are copied and returned in the shortest possible time. The Reprography Division not only services PANSDOC but also other Pakistan scientific, technical, and commercial organizations to keep both men and machines occupied. Service charges to commercial organizations are levied after deducting the cost of the material they have supplied.

Scientists prefer to use photocopy or hard copy, so most of the orders are for photocopies. The average number of photo and photostat copies supplied per year comes to 45,000 pages. About twenty thousand microfilmed pages are supplied in a year. Therefore, the total number of pages supplied in one form or another is about 70,000 per year, or a total of two hundred and fifty thousand printing impressions. An average of 20 to 30 publications is printed per year. Nominal charges are made for all reprography services to stop abuse.

Translation Division.--Since Pakistan is far from European learning centres, the literature they produce must be translated before researchers can use it. Because of their prohibitive cost and the variety of languages needed, translation services are provided only on request from individual scientists. The chances of two scientists requesting translation of the same paper is remote, from one to five percent. The Centre has made more than 1,000 translations, apart from miscellaneous short communications. The major languages translated are German, French, and Russian, though the Centre can translate from fourteen languages. Selected translations are listed in "PANSDOC's List of Translation" which contains an author and subject index. All translations are notified to the British Commonwealth Scientific Liason Office in London.

PANSDOC receives the Commonwealth Scientific Translation Index cards which are used in preparing bibliographies and searching for translations. The American Consultants Bureau Russian cover to cover translations and the Pergamon Press translations are received also. The contents lists of these journals are circulated as a current awareness service for the latest Russian scientific literature. Articles of general interest are listed for Pakistan scientists from the National Lending Library's Russian Bulletin. And they have received this service enthusiastically. Provided the translations are available, this could be done for German, French, Japanese and Chinese literature also. The Commonwealth Translation

Index cards contain very useful information which gets lost if not brought to the user's attention. If these cards could be machine indexed and catalogued, retrieval could be advantageous to researchers. Since the cards are produced in thousands, commonwealth assistance would be required for publication of a "Commonwealth Translation Index".

So far I have discussed PANSDOC structure and services. The Centre has other responsibilities essential to its success.

At the instance of the National Science Council, PANSDOC collected information on current scientific research projects and published it in the Directory of Current Research Projects, 1967-68. This publication covers one hundred thirty institutions, and three thousand research projects being carried out by five thousand scientists. It contains a name, subject and organization index and is arranged by city.

The Union Catalogue of Scientific Periodicals in the Libraries of Pakistan has been published thru use of the data processing equipment. Total journal entries are about 6,000 and they show the issues present for each year and library. 50,000 punched cards were used in preparing this directory, the first of its kind in Pakistan.

Also, the Pakistan Science and Technological Research Division of the Ministry of Education, Science and Technology requested PANSDOC to prepare technical data on activity in science and technology for use in framing science policies.

Other Activities.--Several seminars and symposia have been held, one in March 1963 on the development of technical libraries. Not only librarians but also the heads of government institutions, vice chancellors, professors and deans of science faculties were invited. A three day symposium concluded with resolutions for developing these libraries. PANSDOC was put in charge of executing all resolutions and most of them have been carried out. One resolution was for the establishment of a central science library in each of the two wings of Pakistan. PANSDOC prepared a scheme for a national science library and submitted it to the Pakistan Planning Commission. The scheme is under consideration and will soon be finalized.

PANSDOC is also providing technical assistance to various scientific libraries thru in-service training for their librarians in indexing, cataloguing, and classification. Furthermore, PANSDOC is advising on the establishment of information sections in research institutes.

Documentalists and technical personnel in document reproduction are being trained, also. Punjab and Dacca University personnel have been so trained, for example. The National Archives and the State Bank established their document reproduction units with PANSDOC help and their officers were trained. A training course is offered free and extends from three to six months depending upon the trainee's background.

PANSDOC has offered its training facilities to other Asian documentation centres. Heads of the documentation centres of the Philipines and Indonesia were sent to Karachi for short periods. Training has been given to the Thailand National Documentation Centre personnel. Similar offers are now available to the newly established documentation centres of Iran and Turkey.

PANSDOC collaborates with the University of Karachi in teaching documentation in the graduate library science program. Graduate courses are offered in "Documentation" and "Library Services in the Field of Science and Technology". Students receive both their theoretical and practical training at the Centre. There is a growing realization of the importance of documentation in universities. The Centre has introduced the newly developed field of INFORMATICS to the University.

Not any has the Pakistan National Scientific and Technical Documentation Centre consolidated firmly its national activities but also it can cooperate with the other CENTO countries.

In conclusion, the popularity and intensity of documentation activity depends largely on four factors: government realization of the importance of this activity, provision of development funds, wise guidance from the parent organization, and the dedication of the men behind it. All of these factors make the total sum of progress of any activity in a developing country.

Questions from the Audience.--The question of document procurement from abroad was brought up by Mr. Sinai. Dr. Mohajir stated that most libraries supply documents in four to six weeks. On rush orders the libraries charge more but ship the material quicker. Photocopies are not requested from foreign sources because of the cost involved. $1500 per year is spent on microfilm orders from abroad. PANSDOC supplies customers with reference material not available in Pakistan libraries.

Dr. Harvey inquired about PCSIR's purposes and Dr. Mohajir stated that it coordinates government and private scientific research.

Mr. Mazaher brought up the problem of several mother tongues in Pakistan. Dr. Mohajir stated that the official language of science is English.

Mr. Sinai asked how the Centre knows user interests. A questionnaire was sent to ask these interests, and PANSDOC has collected material accordingly. PANSDOC searches for material first in Karachi, Lahore and Dacca. Mr. Sinai inquired also about the university library science department offerings of information science courses. Only the University of Karachi offers these courses. They meet for two hours a week and 72 hours a year for both practical and theoretical courses and cover all subjects related to information science.

Mr. Mazaher inquired about payment methods and the approximate amount of the total budget. Dr. Mohajir answered that the annual budget is $125,000 and payments are made thru both UNESCO coupons and a special bank account.

Dr. Mohajir also stated that part-time translators are used as well as full-time. They are paid on a foolscap size page of 300 words rate. All have masters degrees, and some have doctorates.

A NOTE ON THE STATUS OF UNION LISTS OF SERIALS IN MUSLIM COUNTRIES WITH PARTICULAR REFERENCE TO PAKISTAN

by A.R. Ghani

Research scholars must have ready access to published literature, primarily in periodicals. Bibliographic control of journal holdings is thus of paramount importance for documentation centres and libraries serving researchers. Union lists of serials are basic tools needed to locate material. All of us are familiar with such classics as the World List of Scientific Periodicals (now merged with the British Union Catalogue of Periodicals) and the American Union List of Serials. With national documentation centre establishment in several developing nations, union list of serials preparation has been given top priority. In India, for example, INSDOC has achieved good control through a planned program of regional catalogue publications, in some cases covering massive collections.

Union list of serials compilation entails very laborious work, requiring much time, energy and accuracy. Although the ultimate goal should be a national union list, individual institutions should be encouraged to publish their own holdings. Amalgamation of these lists will contribute toward a national list. Several kinds of union lists may be published, e.g., lists of foreign periodical holdings, or even holdings in a single foreign language; lists in specific fields; lists of current national periodicals; etc.

For this paper, an attempt was made to identify the muslim world countries which have published information on their serial holdings. Bibliographical details of these publications have been listed in the appendix by country. The "International" Section covers well-known directories containing information on muslim serials.

UNESCO and F.I.D. have encouraged such list preparation and have drawn up standard bibliographic forms for them. F.I.D. has distributed a series of national lists of "Technical Journals for Industry". Such lists have been issued for Indonesia and Turkey, while those for Iran and Pakistan are under preparation.

Pakistan has produced many serial lists and has much of this literature under bibliographic control. One of the very few published guides to periodical holdings in pre-independence British India was issued by Panjab University, Lahore, in 1932 (Ser. No. 82). Ten years later, Lahore also published a "List of holdings of scientific periodicals of the library of the Indian Institute of Science (Bangalore, South India), brought up to the end of 1941" (Modern Librarian, Lahore, 1942-43, 13(1), Supp.: 1-48 pp.).

Immediately after independence, the Pakistan Association for the Advancement of Science and the Fazl-i-Omar Research Institute initiated Pakistan's bibliographic activity and two lists of serials, Nos. 65 and 66, were published.

All of the following are PANSDOC compilations:

(1) Scientific and Technical Periodicals of Pakistan (Ser. no. 76). With details of frequency, subscription, and other information according to the UNESCO pattern.

(2) Technical Journals for Industry: Pakistan (Ser. no. 55). To be published and sold by FID.

(3) Scientific and Technical Periodicals of Pakistan: A Preliminary Survey of Holdings in Foreign Libraries (Ser. no. 6). This guide is particularly useful to Pakistan scientists studying abroad who may wish to consult a Pakistan journal.

(4) Union Catalogue of Scientific and Technical Periodicals in the Pakistan Council of Scientific and Industrial Research (Ser. no. 72). Holdings of PCSIR regional laboratories plus the PANSDOC Library.

(5) Union Catalogue of Scientific and Technical Periodicals of Lahore (Ser. no. 79). Data on thirteen Lahore libraries.

(6) Union Catalogue of Scientific and Technical Periodicals in Pakistan Libraries (Ser. no. 78). A national list just published. It lists 5898 titles with holdings in nearly one hundred libraries. Alphabetic arrangement of titles. Underneath each, the towns are set out in two groups: I- Dacca, Karachi, and Lahore, and II- the rest of the towns in one serial order. Against the towns, the institutions are set out, again alphabetically. The triple-town element, Dacca-Karachi-Lahore, has deliberately been put out of step and at the top since PANSDOC has branches in these towns, and material there can easily be borrowed for reproduction. In Group II towns, on the other hand, access to the required material is sometimes difficult. Compilation of this catalogue has been facilitated by the cooperation of various libraries and the publication of individual library lists as well as those covering several libraries. Bibliographical details will be found under Pakistan, below.

Busy at work.

Group picture of participants.

APPENDIX

International

1. AMERICAN ORIENTAL SOCIETY

   Catalogue. New Haven, Conn., 1930. (List of journals, pp. 15-37).

2. ARRIENS, LOUISE

   Union List of Medical Periodicals in Middle East Libraries. Beirut, American University of Beirut. (In preparation: survey covers more than 60 medical libraries in the region).

3. BOALCH, D.H., *ed.*

   Current Agricultural Serials. A World List of Serials in Agricultural and Related Subjects (excluding Forestry and Fisheries). Current in 1964. Oxford, International Association of Agricultural Libraries and Documentalists.

   Vol. I, 1965. 351 pp.

   Vol. II, 1968. 95 pp. *Conspectus of Geographical Headings*, pp. 18-20;

   Asia: Aden... Indonesia, Iran, Iraq, Jordan, Lebanon, Malaya, Pakistan... Syria, Turkey;

   Africa: Algeria, Egypt, Morocco, Sudan, Tunisia;

   Main Index, pp. 21-95, subject and country indication.

4. CONOVER, HELEN F., *comp.*

   Serials for African Studies (Library of Congress) Washington, 1961. 106 pp.

5. DUIGNAN, PETER and GLAZIER, KENNETH M.
A Checklist of Serials for African Studies, Stanford, Calif., 1963. 106 pp.

6. GHANI, A.R. and GHANI, A.
Scientific and Technical Periodicals of Pakistan: A Preliminary Survey of Holdings in Foreign Libraries, pp. 213-99. In "Development of Scientific and Technical Libraries in Pakistan; Proceedings of PANSDOC Symposium", March 14-16, 1963. Karachi, PANSDOC, 1965. vii, 300 pp. Data on 174 Pakistan serials, current and non-current, available abroad in Afghanistan, Algeria, Indonesia, Iran, Iraq, Lebanon, Malaya, Morocco, Sudan, Syria, Tunisia, Turkey and UAR.

7. HARRIS, C.D.
Annotated World List of Selected Current Geographical Serials in English. Including an Appendix of Major Serials in Other Languages, with Regular Supplementary or Partial Basic Use of English. 2nd ed. Chicago, University of Chicago, Dept. of Geography, 1964. 32 pp. (Research Paper no. 96).
English: Indonesia, p. 10, 1 title; Pakistan, p. 12, 4 titles; UAR, p. 14, 1 title.
Other Languages: Afghanistan, p. 19, 1 title; Indonesia, p. 24, 1 title; Iraq, p. 24, 1 title; Turkey, p. 29, 1 title.

8. HARVARD UNIVERSITY LIBRARY
   Catalogue of Arabic, Persian and Ottoman Turkish Books. Cambridge, Mass., The University, 1968. 5 vols. 19th and 20th century periodicals an outstanding feature.

9. INTERNATIONAL FEDERATION FOR DOCUMENTATION (FID)
   Abstracting Services, Vol. I- Science, Technology, Medicine, Agriculture. The Hague, FID, Nov. 1969. 284 pp. (FID Pub. no. 455). *Indonesian Abstracts*, p. 99; *Pakistan Science Abstracts*, p. 140; *Key to Turkish Sciences*, p. 36.

10. INTERNATIONAL FEDERATION FOR DOCUMENTATION (FID)
    Abstracting Services, Vol. II- Social Sciences, Humanities. The Hague, FID, Dec. 1969. 92 pp. (FID Pub. no. 456). *Indonesian Abstracts*, p. 33; *Key to Turkish Sciences*, p. 36.

11. INTERNATIONAL FEDERATION FOR DOCUMENTATION (FID)
    Library and Documentation Journals. 3rd rev. ed. The Hague, FID, Aug. 1968. 88 pp. (FID Pub. no. 433). Iran, p. 36, 1 title; Pakistan, p. 46-47, 3 titles; Tunisia, p. 55, 1 title; Turkey, p. 55, 2 titles; UAR, p. 55, 2 titles.

12. INTERNATIONAL LABOUR OFFICE
    List of Books, Reports and Periodicals in the Library on Middle Eastern Countries. Geneva, 1952. 11 pp. 200 titles. (*Its* Bibl. Ref. List no. 56).

13. INTERNATIONAL LABOUR OFFICE
Register of Periodicals Currently Received, Alphabetical List and Country List. Geneva, 1970. 201 pp. (LD/Notes/42).

14. LJUNGGREN, FLORENCE and HAMDY, MOHAMMED
Annotated Guide to Journals Dealing with the Middle East and North Africa. Cairo, American University in Cairo Press, 1964. 105 pp.

15. THE MIDDLE EAST AND NORTH AFRICA, 1969-1970 16th ed.
A Survey and Directory... with Geographical, Historical and Economic Surveys, Concise Information on Political, Industrial, Financial, Cultural and Educational Organizations, and Who's Who in the Middle East and North Africa. London, Europa Publications, Ltd., 1961. xvi, 988 pp. Contents includes: The Press:

Afghanistan: Dailies, 14, Periodicals, 28 (p. 132);
Algeria: Dailies, 4, Weeklies, 6, Periodicals, 8 (p. 161);
Chad: Periodicals, 5 (p. 181);
French Territory of Afar and Issa People (French Somaliland): Periodicals, 4 (p. 245);
Iran: Dailies, 24, Periodicals, 40 (p. 270-72);
Iraq: Dailies and Weeklies, 21, Periodicals, 18 (p. 309-10);
Jordan: Dailies, 2, Periodicals, 10 (p. 403);
Kuwait: Dailies, 5, Weeklies and Periodicals, 14 (p. 423);

Lebanon: Dailies and Weeklies, 54, Periodicals, 13 (p. 449-51);

Libya: Dailies, 6, Periodicals, 20 (p. 482);

Morocco: Dailies, 11, Periodicals, 41 (p. 539-40);

Persian Gulf States (Bahrain): Dailies, Weeklies and Periodicals, 7 (p. 569);

Saudi Arabia: Dailies and Weeklies, 22, Periodicals, 7 (p. 593-94);

Somalia: Dailies and Monthlies, 7 (p. 613);

Sudan: Dailies, 14, Periodicals, 31 (p. 666-67);

Syrian Arab Republic: Dailies and Weeklies, 26, Periodicals, 17 (p. 696-97);

Tunisia: Dailies, 6, Periodicals, 26 (p. 724-25);

Turkey: Dailies and Weeklies, 84, Periodicals, 76 (p. 762-65);

UAR-Egypt: Dailies, 17, Periodicals, 69 (p. 824-26).

16. MUSLIM WORLD PRESS EXHIBITION, 1954.

Programme, Addresses and Catalogue: Department of Journalism, University of the Panjab, Lahore, *The University Gazette*, Lahore, 10 Feb. 1954, *24* (4), 21-32. *Catalogue of Exhibits*, pp. 25-31.

1. Afghanistan, 25 titles
2. Algeria, 6 titles
3. Egypt, 15 titles
4. Indonesia, 119 titles
5. Iran, 34 titles
6. Iraq, 37 titles
7. Jordan, 5 titles
8. Libya, 9 titles
9. Pakistan, 535 titles
10. Saudi Arabia, 3 titles
11. Syria, 22 titles
12. Turkey, 19 titles
13. Yemen, 1 title.

17. RANGANATHAN, S.R., et al., eds.
Union Catalogue of Learned Periodical Publications in South Asia, Vol. I- Physical and Biological Sciences. Published with the assistance of UNESCO. Delhi, Indian Library Association, 1953. 390 pp. Covers the holdings of 210 libraries in India, Burma, Ceylon, Indonesia and Malaya.

18. ROYAL ASIATIC SOCIETY
A Catalogue of Printed Books Published Before 1932 in the Library... London, 1940. Periodicals, App. 2, pp. 524-41.

19. UAR NATIONAL COMMISSION FOR UNESCO
Directory of Current Periodicals Published in the Arab World. Compiled by M. El-Mahdi. Cairo, 1965. 51, 49 pp.

I- Periodicals published in Arabic (transliterated), pp. 12-51.

II- Periodicals published in foreign languages by local institutions, pp. 1-15.

III- Periodicals published in foreign languages by foreign institutions, pp. 16-17.

Indexes: Index to titles in foreign languages
Alphabetical index to transliterated titles
Index by country

Total entries: 863 titles. Countries covered: Algeria, Al-Bahrain, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Palestine, Saudi Arabia, Sudan, Syria, Tunisia, UAR.

20. ULRICH'S INTERNATIONAL PERIODICALS DIRECTORY, 1965-66. A Classified Guide to a Selected List of Current Periodicals, Foreign and Domestic. 11th ed. Edited by Eileen C. Graves. New York, Bowker, 1965-66.
Vol. 1: Scientific, Techincal and Medical
Vol. 2: Arts, Humanities, Business and Social Sciences:
Afghanistan, 1 title
Algeria, 2 titles
Egypt, 8 titles
Indonesia, 7 titles
Iran, 1 title
Iraq, 6 titles
Jordan, 1 tilte
Lebanon, 4 titles
Libya, 3 titles
Malaysia, 3 titles
Morocco, 1 title
Pakistan, 41 titles
Sudan, 2 titles
Syrian Arab Republic, 2 titles
Tunisia, 2 titles
Turkey, 10 titles

21. SCIENTIFIC AND TECHNICAL JOURNALS OF EAST AND SOUTH EAST ASIA. 2nd ed. Manila, Philippines, UNESCO South East Asia Science Cooperation Office, 1953. (iii), ii, 233 pp. (Hongkong, Japan, Indonesia, Macao, Malaya, North Borneo, The Philippines, Sarawak, Thailand and Vietnam). Indonesian, pp. 147-57; Malaya, pp. 161-67, subject index and title index.

22. UNESCO
Documents Relating to the Middle East. Paris, International Social Science Bulletin, 1953, 5(4), 671-803, includes: 1. Annotated bibliography of U. N.

publications; 2. Social science periodicals published in the Middle East; 3. Social science periodicals published in the West; 4. Bibliographical publications.

23. U.S. NATIONAL LIBRARY OF MEDICINE

List of Journals Indexed in Index Medicus, 1970. Rockville Pike, Bethesda, Maryland, The Library, 1970. 99 pp. Geographical listing, pp. 83-99:

1. Egypt, 4 titles
2. Indonesia, 1 title
3. Iraq, 1 title
4. Lebanon, 3 titles
5. Morocco, 1 title
6. Tunisia, 1 title
7. Turkey, 5 titles

24. WORLD MEDICAL PERIODICALS

3rd ed. prepared by C.H.A. Fleurent, for the World Medical Association, under the General Editorship of H.A. Clegg. New York, World Medical Association, 1961. 407 pp. (supp. vol.: London, British Medical Association, 1969). Index of Periodicals by Countries, pp. 399-407:

1. Algeria, 15 titles
2. Indonesia, 9 titles
3. Iran, 10 titles
4. Iraq, 6 titles
5. Jordan, 1 title
6. Lebanon, 7 titles
7. Libya, 1 title
8. Malaya, 11 titles
9. Morocco, 6 titles
10. Pakistan, 14 titles
11. Sudan, 2 titles
12. Tunisia, 2 titles
13. Turkey, 56 titles
14. UAR, Egypt and Syria, 28 titles

Afghanistan

25. ARBEITSGEMEINSCHAFT AFGHANISTAN UND DEUTSCHES ORIENT-INSTITUT

Bibliographie der Afghanistan-literatur, 1945-1967. Teil II-Literatur in Orientalischen Sprachen und Erganzungen in Europaischen Sprachen. Hamburg, 1969. 209 pp. Z-Periodika und Sammelwerke, pp. 183-196.

Algeria

26. CATALOGUE METHODIQUE DES "PUBLICATIONS PERIODIQUES" RECUES PAR LES ECOLES DE DROIT ET DES LETTRES

Alger, Bibliotheque Universitaire, 1889, 28 pp. 350 titles. Repertoire des Revues et Periodiques en Cours Recus an 1st Jan. 1960 Par La Bibliotheque Universitaire d'Alger. 1960, 59 pp. 1200 titles.

27. REPERTOIRE DES REVUES ET PERIODIQUES EN COURS RECUS AN 1ST JAN. 1960

Par la Bibliotheque Universitaire d'Alger. Alger, 1960, 59 pp. 1200 titles.

Indonesia

28. BRUGGHEN, W. VAN DER

Centrale Catalogues van des Centrale Natuur Watenschapelijke Bibliothek te Batavia, 1948. Lijst van Periodieken. Bataviaasch Genootsehap van Kunsten en Wetenschappen: Bibliotheek. (Batavia, 1949) 38 pp. 450 titles.

29. INDONESIA

Ligst van Periodieken. Bataviaasch Genootsehap van Kunsten en Wetenschappen: Bibliotheek. (Batavia, 1949) 38 pp. 450 titles.

30. INTERNATIONAL FEDERATION FOR DOCUMENTATION
Technical Journals for Industry: Indonesia. The Hague, FID, 1968 (16 journals).

31. UNESCO
Scientific and Technical Journals of East and South East Asia. (Hongkong, Japan, Indonesia, Macao, Malaya, North Borneo, The Philippines, Sarawak, Thailand and Vietnam). 2nd ed. Manila, Philippines, UNESCO South East Asia Science Cooperation Office, 1953. 233 pp. Indonesia, pp. 147-57; Malaya, pp. 161-67, with subject index and index by titles.

32. UNESCO. Science Cooperation Office for South East Asia.
Union Catalogue of Periodical Holdings in the Main Science Libraries of Indonesia. Pilot ed., Djakarta, 1953. (v), 302 pp. 3000 titles.

33. INDONESIAN NATIONAL DOCUMENTATION CENTRE
Union Catalogue of Scientific Periodicals in Indonesian Libraries. As part of library rehabilitation, it has been decided to up-date the union catalogues of selected scientific periodicals of Indonesian special libraries. The Centre was reported to have undertaken this project in June 1969.

Iran

34. CENTO INSTITUTE OF NUCLEAR SCIENCE
    Tehran Union Catalogue of Scientific Periodicals. Tehran (1962). 69 pp.

35. IRANDOC
    A Directory of Iranian Newspapers, 1969. Compiled by Parvin Aboozia. Tehran, Jan. 1970. 48 pp. (Ref. Book Ser. no. 2). 112 newspapers are included in both Persian and English versions.

36. IRANDOC
    A Directory of Iranian Periodicals, 1969. Compiled by Poori Soltani. Tehran, Dec. 1969. 106 pp. (Ref. Book Ser. no. 1). Data on 244 Iranian Periodicals in both Persian and English versions.

37. IRANDOC
    Union List of Iranian Social Science and Science Serials (under compilation).

38. RABINO, HYACINTH L.
    Surat-e-Jarayed-e Iran va Jarayedi keh dar Kharej-e-Iran be Zaban-e-Farsi Tab'shoden ast. Rasht, Matba'-ye Orvat al Vosqa, 1329 Qamari. 18 pp. Containing 243 titles of old Farsi newspapers of Iran and those published in other countries.

39. TEHRAN UNIVERSITY. Faculty of Agriculture.
    List of Periodicals. Compiled by M.H. Daneshi.

Karaj, College Press, 1967. 66 pp. (*Its* Bull. no. 101). Data on holdings of 258 periodicals arranged by Dewey Decimal Classification. Two alphabetical indices in Persian and other languages, pp. 49-66.

Kuwait

40. KUWAIT. *University Library*.
Guides to Periodicals in the Central Library, Kuwait, The University. No. 1: Jan. 1968. No. 2: Mar. 1969.

Lebanon

41. AMERICAN UNIVERSITY OF BEIRUT. *Medical Library*.
Journals on File in the Medical Library, 1970. Beirut, A.U.B., Jan. 1970. 58 pp. *Mimeo*. Over 1000 titles.

42. AMERICAN UNIVERSITY OF BEIRUT. *Medical Library*.
List of Journals Subscribed by the Departments of the Faculties of Medical Sciences of the American University of Beirut. Beirut, A.U.B., 1970. 17 pp. *Mimeo*.

43. AMERICAN UNIVERSITY OF BEIRUT. *Medical Library*.
List of Standing Orders (Serials). Beirut, A.U.B., 1967. (8 pp.) *Mimeo*.

Malaysia

44. CURRENT MALAY SERIALS
Majallah Perpustakaan, Singapore, Oct. 1962, *2*(2), pp. 75-94. Lists 221 Malay and English titles.

45. DATO MUDA, MOHAMMAD BIN
Tarikh Surat Khabar, Singapore. 128 titles. Revised ed. comp. by ROFF.

46. HARRIS, L.J., comp.

Guide to Current Malaysian Serials. Kuala Lumpur, University of Malaya Library, 1967. xi, 73 pp.

47. HAZRA, NIRANJAN K. and SIEW CHENG, EDWIN LEE

Malayasian Serials; a Checklist of Current Official Serials of the Malaysian Government. Centre for South-East Asian Studies in the Social Sciences, Dept. of History, University of Singapore. Singapore (1964). 108 pp. Duplicated list of current official serials of the Malaysian Government "held at the University of Singapore."

48. ROFF, WILLIAM R.

Guide to Malay Periodicals, 1876-1961, with Details of Known Holdings in Malaya. Singapore, Eastern Universities Press, for the Dept. of History, University of Malaya, Kuala Lumpur, 1961. 107 pp. Chronological list of 147 Malay journals and newspapers published in Malaya since 1876 with indication of files available. An appendix details 14 journals published in Indonesia, Cairo and Mecca, which circulate in the Peninsula.

Morocco

49. MOROCCO. Institut Scientific Cherifien.

Catalogue des Periodiques. (Rabat, 1946). 35 pp.

50. MOROCCO. Ministere de l'Agriculture. Bureau de la Documentation.

Bibliographie les Livres et Periodiques. Compiled by A. Saidi. Rabat, 1962. 8 pp.

51. MUHAMMAD IBN AZZUZ HAMIM
Inventario Provisional de la Hemeroteca del Protectorado, Seccion Arable. Alta Comisaria de Espana en Marruecos: Delegacion de Educqcion y Culture: Direccion de Archives y Bibliothecas del Protectorado. Tetuan, 1953. 147 pp. 1000 Arabic periodicals.

Pakistan

52. DACCA UNIVERSITY LIBRARY
Union Catalogue of Scientific Periodicals Held by Dacca Libraries. Dacca, The University Library, 1966. 122 pp. Mimeo. Data on holdings of 13 libraries.

53. DEFENCE SCIENCE ORGANIZATION. Rawalpindi Laboratories.
No. 1 Supplement to Periodical Holdings, Dec. 1967. List of journals received during the quarter ending 31st March, 1968. Rawalpindi. 21 pp. Mimeo.

54. EAST PAKISTAN. Public Relations Department.
Statement of Newspapers and Periodicals Printed and Published in East Pakistan During the Year, 1956. Dacca, Superintendent of Government Printing, 1956. v.p.

55. EAST PAKISTAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY LIBRARY
Alphabetical List of Periodicals, 1955-66. Dacca, 1965. 16 pp. Mimeo.

56. INTERNATIONAL FEDERATION FOR DOCUMENTATION
Technical Journals for Industry: Pakistan. The

Hague, FID (under preparation).

57. JINNAH POSTGRADUATE MEDICAL CENTRE LIBRARY, Karachi.
Periodicals and Serial Holdings (back sets).
Karachi (1966) 12 pp. Mimeo.

58. KARACHI UNIVERSITY LIBRARY
List of Journals Received in the Karachi University Library. Pilot ed. Karachi, The University Library 1962. 15, 4 pp. Mimeo.

59. KARACHI UNIVERSITY LIBRARY
Current Periodicals in Karachi University Library, 1963-64. Karachi, The University Library, 1964. 57 pp. Mimeo.

60. KARACHI UNIVERSITY LIBRARY
Periodical Holdings, 1963. Karachi, The University Library, 1963. iii, 118 pp. Mimeo. Arranged under broad subject groupings with a title index.

61. KARACHI UNIVERSITY LIBRARY
Periodicals Received in the Karachi University Library (1966-67). Karachi, University of Karachi, 1967. 78 pp. Mimeo.

62. KING EDWARD MEDICAL COLLEGE, Lahore
Catalogue of Books in the K.E. Medical College Library, 1950. Lahore, Supt. Govt. Printing, Punjab, 1950. v, 231, 29 pp. Pt. II - Catalogue of periodicals and journals, 29 pp. Data on holdings of about 200 titles.

63. NATIONAL BOOK CENTRE, PAKISTAN

English Language Periodicals from Pakistan: a Guide List. Karachi, The Centre, Oct. 1967. 55 pp.

64. PAKISTAN INSTITUTE OF DEVELOPMENT ECONOMICS LIBRARY
List of Periodical Holdings. Karachi, The Institute, Sept. 1969. 45 pp. Mimeo. Sec. I - Pakistani periodicals, pp. 1-17 (147 titles). Sec. II - Foreign periodicals, pp. 18-45 (251 titles).

65. PAKISTAN. Information Department.
List of Newspapers and Periodicals Published in West Pakistan During the Year Ending Dec. 31st, 1967. Lahore, Govt. Printing, 1968. 89 pp.

66. PAKISTAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
A Guide to the Current Scientific Journals Received in Various Libraries of West Paksitan, comp. by A.R. Ghani. Lahore, Association, 1950. iii, 26 pp. Misc. Pub. No. 1.

67. PAKISTAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
Periodical Publications of Pakistan, comp. A.R. Ghani. Lahore, The Association, 1960. 8 pp. Mimeo.

68. PAKISTAN ATOMIC ENERGY COMMISSION. Atomic Energy Agricultural Research Centre, Tandojam.
Recent Additions: An Up To Date List of Journals and Periodicals Available at Atomic Energy Agricultural Research Centre Library. Tandojam, AEARC, May, 1969. 16 pp. Mimeo.

69. PAKISTAN ATOMIC ENERGY COMMISSION. Atomic Energy Centre, Dacca.

Catalogue of Periodicals Available at the Library of the Centre up to June 1969. Compiled by Anwarul Islam and H. Rahman. Dacca, The Centre, 1969. Mimeo. (AECD/Lib/7).

70. PAKISTAN ATOMIC ENERGY COMMISSION. Atomic Energy Centre Library, Lahore.
Holdings of Scientific Periodicals in the Library, A.E.C., Lahore. Compiled by M.M. Rafique, et al. Rev. ed. Lahore, The Centre, May 1969. 90 pp. (PAECL/Lib-29) 1st ed. 1966 and Supplements. Data on 586 periodicals.

71. PAKISTAN ATOMIC ENERGY COMMISSION. Atomic Energy Centre Library, Lahore.
Union Catalogue of Scientific and Technical Periodicals in Pakistan Atomic Energy Commission Libraries. Compiled by M.M. Rafique and Lutful Mannan. Lahore, The Centre, Sept. 1970. i, 154 pp. Mimeo. (AECL-Pak/Lib-31) Data on back files of 832 periodicals available in five PAEC Libraries.

72. PAKISTAN BIBLIOGRAPHICAL WORKING GROUP
A Guide to Periodical Publications and Newspapers of Pakistan. Compiled by A. Moid and Akhtar H. Siddiqui. Karachi, The Group, 1953. iv, 60 pp. Pub. no. 27. 750 titles.

73. PAKISTAN BIBLIOGRAPHICAL WORKING GROUP
Union Catalogue of Periodicals in Social Science Held by the Libraries in Pakistan. Compiled by Fazal

Elahi and Akhtar H. Siddiqui. Karachi, The Group, 1961. v, 92 pp. Pub. no. 5. Over 1000 titles of periodicals held by 55 libraries.

74. PAKISTAN COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH. PCSIR Laboratories, Karachi.
Library Holdings of Journals Available and Missing Numbers up to the End of 1962. Karachi, Central Labs., PCSIR, July 1963. 21 pp. Mimeo. Arranged under broad subject grouping.

75. PAKISTAN COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH. PCSIR Laboratories, Lahore.
Scientific and Technical Periodicals in the Library of the PCSIR Labs., Lahore, Dec. 1968. Compiled by Nazir Ahmad Chaudhury and S. Izhar Ahmad. Lahore, The Laboratories, (1969). Contents:
Pt. I - Stock position in 1964, 32 pp. Pt. II - (Additions in 1965), 17 pp. Pt. III - (Additions in 1966), 14 pp. Pt. IV - (Additions in 1967-68), 15 pp. Pt. V - (Reports BIOS), 19 pp.

76. PAKISTAN COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH. PCSIR Publication Branch, Karachi.
List of Periodicals Received in Exchange for the Pakistan Journals of Scientific and Industrial Research, 1968. Karachi, PCSIR, 1969. 29 pp. Mimeo. Data on holdings for 365 foreign periodicals being received in exchange, listed by country.

77. PANSDOC

Scientific and Technical Periodicals of Pakistan. 2nd ed. Compiled by A.R. Ghani and Akhtar H. Siddiqui. Karachi, PANSDOC, 1961. ii, 12 pp. Mimeo. Bibl. no. 303. (new ed. in prep.)

78. PANSDOC

Union Catalogue of Scientific and Technical Periodicals in Pakistan Council of Scientific and Industrial Research, 1967. Edited by Akhtar H. Siddique. Karachi, PANSDOC, 1967. 64 pp.

79. PANSDOC

Union Catalogue of Scientific and Technical Periodicals in the Libraries of Pakistan. Karachi, The Centre, 1970. 217 pp. 5898 titles. Covers data on 98 libraries in both wings of Pakistan.

80. PANSDOC. Regional Office, Lahore.

Union Catalogue of Scientific and Technical Periodi-Cals in Libraries of Lahore, 1969. Compiled by Riaz H. Akbar. 1st ed. Lahore, PCSIR Labs., Dec. 1969. 187 pp. Mimeo. Data on 19 libraries.

81. PAKISTAN METEOROLOGICAL SERVICE, HEADQUARTERS' LIBRARY

Catalogue of Publications: Pt. 1 (Periodicals). Karachi, Sept. 1956. 84 pp. Data arranged under countries in alphabetic order.

82. PAKISTAN SPACE AND UPPER ATMOSPHERE RESEARCH COMMITTEE (SUPARCO)

Journal Holdings in the Technology Division Library, Karachi, May 1969. 21 pp. 96 titles. *Mimeo*.

83. PANJAB UNIVERSITY LIBRARY, Lahore.
List of Periodicals and Serials with a Subject Index. Compiled by L. Labhu Ram. Lahore, The University Library, 1932. 56 pp.

84. SALAM, M.A. and SIDDIQUI, AKHTAR H.
A Critical Assessment of the Holdings of Pakistani Scientific Periodicals in Karachi Libraries, pp. 203-212 In: "Development of Scientific and Technical Libraries in Pakistan: Proceedings of PANSDOC Symposium", Mar. 14-16, 1963. Karachi, PANSDOC, 1965. vii, 300 pp.

85. UNESCO. *South Asia Science Cooperation Office*.
Scientific Institutions and Scientists in Pakistan, By A.R. Ghani. New Delhi, 1958. ix, 501 pp. Technical periodicals of Pakistan, pp. 82-87.

86. U.S. LIBRARY OF CONGRESS. *American Libraries Book Procurement Centres*, Karachi-Dacca.
Annual List of Serials. *Accessions List of Pakistan*, Karachi, July 1970, *9*(No. 7, pp. 2). 78-171. 978 titles.

Sudan

87. SUDAN. *Khartoum University Library*.
Sudanese Union Catalogue of Periodicals. Khartoum, 1961. iii, 116, 12 pp.

Tunisia

88. PILIPENKO, HELENE and DE PINA, JEAN R.
Recapitulation des Periodiques Officials Parus en Tunisie de 1881 a 1965. Royaume de Tunis: Ministerė de l'Education Nationale: Bibliotheque Nationale de Tunisie, Tunis, 1956. viii, 110 pp.

Turkey

89. INTERNATIONAL FEDERATION FOR DOCUMENTATION (FID)
Technical Journals for Industry: Turkey. The Hague, FID, 1969. 23 journals.

90. TURKEY
Turkiyede Sureli Yayinlar ve Basimevleri, 1965. (Periodicals and printed matter published in Turkey, 1965). Yayimliyan: Turizm ve Tanitma Bakanligi Arsev Mudurlugu.

91. TURKISH DOCUMENTATION CENTRE (TURDOK) Ankara.
Union Catalogue of Periodicals in Turkish Libraries. (Being compiled).

U.A.R.

92. AMERICAN UNIVERSITY LIBRARY. Documentation Unit.
Guide to Periodicals at the A.U.C. Library, Cairo, 1969. iii, 57 pp. Arranged by subject, following Dewey classification.

93. SWETS AND ZEITLINGER. Backsets Department, Amsterdam (The Netherlands).
Egyptian Periodicals: List no. 670, Oct. 1969. 4 pp.

Amsterdam, Keizergracht 487. Price list of stock of backsets, many complete files, of 60 UAR learned periodicals including a few items from Algeria, Lebanon and Sudan.

94. UAR. National Library.
List of Current Periodicals (and newspapers). Cairo, The National Library, 1959. 88 pp. 450 titles.

95. UAR. National Research Council.
Union Catalogue of Scientific Periodicals in Egypt up to the End of 1949. Cairo, Government Press, 1951. x, 379 pp. 3150 titles.

96. UAR. National Research Council, Scientific and Technical Documentation Division.
List of Periodicals Received in the Library. Cairo, 1958. 26 pp. Misc. Pub. no. 17. Also pub. in Doc. Bull. National Research Centre, Cairo, April 1958. 4(4), 402-26. 800 titles.

97. U.S. LIBRARY OF CONGRESS. American Libraries Book Procurement Centre, Cairo.
Annual List of Serials. Accessions List Middle East, Cairo, July 1970, 8(No. 7, pt. 2), 269-325. 298 titles. Mainly Egyptian, including a few from Algeria, Kuwait and Tunisia.

Discussion From the Audience. The question of union catalogue cooperation was brought up. Mrs. Burian explained that the Ankara periodical list was ready and that the Instanbul list would be ready in two years and would cover 75 technical libraries.

Dr. Harvey suggested that foreign libraries may seek to purchase a union list of the three countries combined. It was agreed to ask the assistance of CENTO in this matter.

FACTS AND FANTASIES CONCERNING THE POLICY

by Kismet Burian

The important role of science and technology in the national life is widely recognized. One of the most serious scientific problems is that progress has been achieved mainly thru absorbing massive technology developed abroad. To improve science and technology locally, our ability to deal with the information flow must be improved. This area is being studied in the field of documentation which has grown into a science, documentology, and should be taught at the university level. Documentation services in developing countries should identify significant information problems and establish appropriate experimental techniques for dealing with them. A survey of users should be made to identify their information needs. After discovering them, efforts must be made to improve the match between these needs and the indexer's terms. In a well planned study, we need a carefully organized body of data about the problems to be solved, so decisions can be based on facts, not fantasy.

TURDOK has the continuing support of the Scientific and Technical Research Council of Turkey. We try to ascertain the quantity and nature of Turkish information requirements, then to plan new information units in accordance with overall information science policies. Much emphasis is placed on strengthening the national network. National information policy guidelines are the following:

1. To determine the government mechanisms available for using scientific knowledge in all areas of public policy and to improve present organization.

2. To determine the international scientific information systems in which the country should participate and to identify the national centres already belonging to organized international networks.

3. Who uses existing information services?

4. To identify useful information science research.

Also, the policy gives weight to the following points:

a. Science and economic user needs should be the basis for the scientific information system which should be part of an international system.

b. Economic interest determines establishment of information centres. The community will benefit from the development of a system of information centres.

c. The government must be convinced of the value of establishing scientific information systems which should be treated as macro-projects.

Technical levels of industry must be evaluated and cooperation required among related organizations. Services should be based on inventories and evaluations of people, libraries, equipment, materials, funds and information needs. These findings should be the basis on which are prepared recommendations for a national information system with suggestions for private sector development.

A national documentation centre must determine use patterns, identify trends, examine relationships between producers, processors, wholesalers, users and systems, analyze information systems for costs, performance, resource requirements, and financing methods and also consider the national system in relation to international trends.

Since the goal is to design a national information transfer system which will promote the national research and development program, there must be a comprehensive index of the documents held by major libraries and full description of the nondocument area of oral communications, conferences and symposia. The latter is a difficult area to study.

Here are some of the difficulties encountered in TURDOK's establishment:

a) Transmitting research results from scientists to engineers especially in interdisciplinary fields.
b) Lists of experts are difficult to keep and perhaps not worth the effort.
c) Documentation service can be organized by the ring process, which requires the cooperation of several agencies with a coordinating centre, but we are unsure of this pattern's value.
d) Learning user needs is difficult.
e) A distribution model of scientific information

demand, publications, and use should be made, but how should it be carried out?

f) It is important to cooperate with industry and universities but often difficult.

Certain useful generalizations can be made concerning documentation:

1. Each information system should be organized in accordance with its objectives and should use material in its own way.
2. In information processing techniques the national centre should lead, but common use of equipment by different information systems is possible.
3. The collection, analysis, dissemination and use of information has become a new "knowledge industry". Information systems are part of the total economic system, and the new information technology is a tool to achieve certain goals. Special training schemes are needed if the new information technology is to be fully exploited.
4. Different kinds of users must be satisfied at different times.
5. Strategies for achieving a coherent scientific and technical information policy should be developed.
6. The cost effectiveness ratio must be determined for introducing new technologies into the document handling system.

7. National classification and indexing schemes should be compatible with international standards.

TURDOK operates as follows. Publications must be well designed, easy to read, arranged in subject order, current, and tied into an efficient copying system. At the national level, local language bulletins should attempt the fullest coverage in annotated bibliographies. On the other hand, selective abstracts should provide a continuing record. The contents pages of local periodicals should be distributed to local users, though the value of scanning services of foreign publications is debatable. Informative English abstracts of Turkish research are published for foreign and local distribution and can be used for exchange. Also, listed under broad UDC classifications, the Centre will publish a list of books, journals and reports received.

TURDOK is establishing a translators panel. Requests will be met by giving the user the names of competent outside translators in his area. Panelists must supply TURDOK with the bibliographical data of their translations so a list can be published.

Thesauri appear to be the indispensable link between authors and users. Selection of appropriate words should be based on a statistical survey. TURDOK has compiled various thesauri and uses them actively.

Many documentation centres run efficiently on a manual basis. An inefficient manual system should not be automated. A case can be made for computer use on the basis of information retrieval, index preparation, and bibliography listing. However, the computer system will seldom prove to be cheaper than the manual system. A well organized and stocked library must be fully integrated into the information centre.

Discussion from the Audience.--The question of union catalogue cooperation was brought up. Mrs. Burian explained that the Ankara periodical list was ready and that the Istanbul list would be ready in two years and would cover 75 technical libraries.

Mr. Harvey suggested that foreign libraries may prefer to purchase a union list of the three countries combined. It was agreed to ask the assistance of CENTO in this matter.

INTRODUCTION, HISTORY AND AIMS OF TURDOK

by Tevfik Olgun

In recent years Turkish research has grown along with scientific publication and the demand for copies of it. To assist the researcher in locating his material, in 1966 the Science Board of the Scientific and Technical Research Council of Turkey established a documentation centre to provide nation-wide non-profit service. In line with the recommendations of J.A. Schuller, Director of TDCK, Netherlands, the Scientific and Technical Documentation Centre of Turkey, TURDOK, was established as a division of the Council. Its development started with the advisory services of A.L. Gardner, UNESCO expert.

Soon TURDOK started to communicate with scientific and industrial organizations in and outside Turkey, with universities, governmental and industrial organizations and libraries. Exchange agreements were established with many of them, and they have helped TURDOK acquire papers, reprints, serials, monographs and periodicals from many countries.

Since TURDOK is a national centre, it urges ministries to establish their own centres for domestic material in special fields, and TURDOK gives technical assistance to them. Upon the recommendation of TURDOK, documentation courses will soon be started at the School of Library Science, Ankara University, and a scientific information network will be created.

Organization, Services and Personnel.--In its first year, TURDOK had only four sections with one information scientist in each: (a) chemistry, (b) veterinary and animal sciences, (c) engineering, and (d) agriculture. Later, information scientists were added for other subjects: (a) electrical engineering and electronics, (b) applied economics, (c) biology and geology, and (d) mathematics and physics. Now, TURDOK has four main divisions: (a) basic sciences, (b) natural sciences, (c) engineering sciences, and (d) technical documentation.

The basic sciences division covers physics, chemistry, mathematics and biology, and the natural sciences division covers medicine, agriculture and forestry, veterinary and animal sciences. The engineering sciences division is divided into these sections: chemical engineering, mechanical engineering, nuclear engineering, electrical engineering and electronics. In addition, TURDOK has services in applied economics, and the engineering sciences division will be expanded as the need arises.

Each section is headed by an information scientist for which at least a B.Sc. degree and a sound knowledge of the English language are required. For all divisions TURDOK has eight information scientists who are specialists and most of them have M.Sc. degrees. Three of them know French, German, Dutch and Russian as a third language. Unfortunately TURDOK still seeks a medical information scientist.

Technical Documentation Division.--The library, publication, translation and reproduction services are in the technical documentation division and report directly to the Director.

Library.--The Centre has built up its own library through purchase, subscription, exchange, and donations. It attempts to obtain basic bibliographical reference books rather than scientific journals and has in addition a large collection of abstract, bibliographical and indexing journals. Since TURDOK can obtain periodical loans from other libraries, only periodicals not available elsewhere in Ankara are collected.

TURDOK has completed a union catalogue of scientific periodicals in Ankara libraries, and supplements will be issued regularly. Ankara libraries have 5,000 current foreign periodical titles. On the other hand, an almost complete collection of Turkish scientific serials from which research articles are abstracted for the Key to Turkish Science Series are available.

The Library's collections include:

Turkish journals (scientific and technical): 70 subscribed, 70 exchange or gifts, total 140 titles.

Foreign journals: 290 subscribed, 105 exchange or gifts, total 395 titles.

Foreign abstract, index and bibliographical journals: 230 subscribed, 175 exchanges or gifts, total 405 titles.

Books total 8000 volumes of which 500 are reference.

Two librarians, one Library School student, and one typist are employed in the Library.

Publication and Translation Services.--The Key to Turkish Science Series consist of abstract bulletins in chemistry, veterinary and animal sciences, engineering, agriculture, electrical engineering and electronics, applied economics, physical sciences, biology, and geology. All nine bulletins appear twice a year, in English, and cover abstracts of scientific research articles published in Turkey or written by Turkish research workers. Journals, serials, monographs, research reports, theses and projects supported by the Turkish Scientific and Technical Research Council are abstracted. The goal is to cover all disciplines in the basic and applied sciences. The abstract bulletins are distributed free to 2750 foreign and 4000 local research organizations, universities, libraries and individuals and are also offered extensively for exchange.

Also, TURDOK plans to publish the title pages of current Turkish scientific periodicals to assist scientists in locating Turkish literature before abstract bulletins are available. A small charge will be made for this publication.

On request from institutions or individuals, TURDOK makes literature searches on scientific subjects. The Centre prepares bibliographical lists, giving titles and references, or by adding an abstract if the article exists in Ankara. On the basis of language and period covered, a fee is charged for literature searches. Eventually lists of current bibliographies will be listed for sale in the Key series.

One of TURDOK's functions is to publicize the importance of the services which can be provided by documentation centres. Therefore, an Internal News Bulletin will be published periodically containing news on documentation. In addition, a series of publications has been started, either by translating or publishing books, booklets, pamphlets, handbooks, etc. on documentation services. After publication of the Ankara union catalogue, as an aid to inter-library loan service, TURDOK intends to compile such catalogues for Istanbul and Izmir.

TURDOK has no staff translators, but has organized translation service through a translator panel. When a translation request is received, the names, specialty and language of these well qualified translators are made available. An index of scientific translations will be maintained to prevent duplication.

Four persons carry out these services in the Publication Section, three technical personnel and one typist.

Reproduction Unit.--The Reproduction Unit consists of a reproduction laboratory and an offset printing shop.

The reproduction laboratory provides either direct readable copies or microcopies.

The machines used for document reproduction are

- Recordak Micro-File Camera
- Recordak Magna Print reader
- Dagmar Microfilm reader
- Atlantic microfiche equipment
- Microfilm and slidecopying equipment
- Microfilm development equipment
- Durst enlarger
- 3M automatic copier
- Flexo-writer (used mainly to reproduce and duplicate reference cards for various catalogues).
- Stencil machine
- Other dark-room equipment and accessories

The machines and appliances used in the offset printing shop are

- Varityper composing machine
- Varityper headliner machine
- Rank-Xerox 1385 master making equipment (sometimes used for reproduction purposes, also).
- Fairchild-Davidson offset printing machine
- Cutter
- Stitching machine

The Centre needs also one gathering machine, one folding machine, and another offset printing machine. The reproduction laboratory and offset printing shop are operated by one technician each who are assisted by another employee each.

Technical Personnel Training.--Training is an important method of overcoming the Centre's problems. Short visits to well-known documentation centres in the United Kingdom, The Netherlands, France and the Federal Republic of Germany have been arranged, four of the information scientists having visited for two month periods each. The Publication Officer and Chief Librarian have also had courses in European countries. Besides short-term visits, TURDOK also plans to provide postgraduate training for its information scientists in the City University of London. An information scientist will enter the M.Sc. in information science degree program for the term 1970-1971, and others will follow him.

In addition, staff members have been trained thru short practical courses given by well-known information scientists and documentalists. First was A.L. Gardner, UNESCO, who stayed for 10 months during 1967, and secondly, through OECD, came Dr. H. Coblans who gave instructive and open-discussion courses to the staff for two weeks.

Classification and Indexing.--Until the beginning of 1970, a large amount of unclassified material, e.g., books, reports, and monographs, piled up in the Centre. The staff decided to classify and store them by U.D.C. and to shelve the journals in alphabetical order by title.

The processing operation is performed by a key word indexing system, in addition to UDC. Therefore, before addition to the store, each document is scanned by an information scientist who selects key words freely to describe its contents. These descriptors are placed in a file in alphabetical order, together with the document address. Such a file may be searched with descriptors.

TURDOK has no thesaurus, but in the near future is planning to construct one for each special discipline. This will enable us to shift to a coordinate indexing system which in turn makes possible computer use for information processing and retrieval.

TURDOK keeps several files. For periodicals and for abstract and index journals, a file is arranged alphabetically according to title. Files are kept for books by author, title, publisher, and UDC number.

Books are classified by librarians and shelved according to UDC numbers. According to contents, each book is given one or two UDC numbers.

Reports, monographs, symposia papers, serials, and articles in Turkish publications, are analysed by informatic scientists. In additon to the book files, a key word file is kept for such material. All cards contain the same information, and file cards are duplicated on the Flexo-writer. One entry is underlined on each card according to the filing desired. Thus, cards for each analysed article are duplicated according to the number of keywords, UDC numbers, authors (up to two), title and publisher. Each document is given an accession number which is recorded in a register book.

Questions from the Audience.--Following Mr. Olgun's paper, Mr. Mohajir observed that both Pakistan and Turkey have avoided developing their own libraries in cities where other local libraries had large collections. Now perhaps both centres should concentrate on developing their own libraries. Mrs. Burian pointed out that rich sources of scientific and technical material exist at the Middle Eastern Technical University and Hacettepe University. Between these sources and the TURDOK collection approximately 10 percent of the requests can be met. The rest are obtained abroad from sources like the N.L.L.

Mr. Mohajir inquired about the percentage of requests for information which came from industry. Mr. Olgun replied that 1/3 of the questions came from university and research institutions and 2/3 from industry. Mr. Ghani suggested that certain types of technical information be supplied automatically to industry as an alerting service.

Mr. Mohajir's question about an inter-library loan system was answered by Mrs. Burian who pointed out that TURDOK engages in friendly reciprocal sharing of material with other libraries, although there is no official inter-library loan system.

Mr. Olgun showed examples of TURDOK's abstract bulletin distributed to scientists to assist in their research and also introduce TURDOK to them.

To a question on photocopy prices, Mrs. Burian replied US $1 for the first six pages and fifteen cents for each subsequent page.

Ankara University offers undergraduate library education, while graduate library work is usually done abroad.

Mr. Mazaher's question on the type of classification and the reasons for its adoption were answered by Mr. Olgun. He said that TURDOK uses both the abridged UDC schedules and also their extensions. UDC is adaptable to all kinds of material and can be computerized. Descriptors are used also. This combination provides both broad and deep cataloging control.

To Mr. Harvey's question, Mrs. Burian replied that the Scientific and Technical Research Council of Turkey was a government appointed but independent advisory body reporting directly to the Prime Minister.

TURDOK has compiled an index of translators which shows language competence, subject specialisation and location. TURDOK puts the user in contact with the translator who arranges payment.

LONG RANGE GOALS AND ORGANIZATION FOR SOUTHWEST ASIAN DOCUMENTATION CENTRES

by Ali Sinai

Introduction and Definitions.--In many aspects of their cultural, economic and political life Iran, Pakistan and Turkey have been cooperating for several years. The three countries have very close relations which make appropriate their cooperation in scientific and technical documentation. During the last few days we have become familiar with various aspects of each centres' activities. Let us now consider some ideas about the future. This paper is intended to discuss the long range goals of these centres and determine the areas in which cooperation can be most easily carried out.

How many months or years do we mean by "long range"? Five or seven years, as most of the national plans call for? I would like to extend this period to a much longer time. The more we can foresee the future, the more we have the chance of planning realistically. On the other hand, minor daily preoccupations will not make us deviate from our established goals. Therefore, I would like to say that "long range" means 20 years.

Southwest Asia comprises other countries than Iran, Pakistan and Turkey. To be more accurate, Pakistan and Turkey can hardly be named Southwest Asian. But this is an arbitrary nomination. Documentation centres already exist in Egypt, India, Israel and Soviet Asian Republics.

Trends in Afghanistan, Iraq and Lebanon are moving toward the establishment of national documentation centres. At the present time, however, it seems unlikely that any of these documentation centres will join the cooperative activities of the present three centres, either for political or other reasons. Let us hope for the day when no barriers exist to cooperation and exchange of scientific information and personnel among all of these countries. It may be asked why this conference is called "Southwest Asian"? This is simply because we want to show our deep desire that one day this conference will have participants from other Southwest Asian countries.

The terms "special library", "documentation centre" and "information centre" mean very similar things. An information centre provides the necessary information for its patrons, and the same thing is done by a special library. The difference is that much more elaborate means are used to provide information in an information centre. It is much more active in disseminating information than is a special library. Besides, an information centre depends heavily on sources other than its own. It may sometimes depend totally on other sources and have no library.

Therefore I would like to include modern progressive libraries such as those at the Turkish Historical Society and the University of Tehran School of Public Health among documentation centres.

Planning needs financial and personnel commitments. This is the most difficult part of the task. It is very difficult to get a government to commit itself on long term plans. Even if the government agrees now, it may cancel the commitment later. However, this should not be a reason to avoid long range planning, because in no case can the future be assured. If planning is done on a realistic basis and after careful study, there is a good chance that a large percent of it will be carried out.

Basic Policies to be Determined.--Documentation is a service very much 'en rapport' with the research environment, and "the tempo and success of documentation activity is determined by the degree of intensity and sophistication of the industrial and social environment".[1]

Due to shortage of funds and qualified personnel, developing countries need to study their resources and possibilities carefully to make maximum use of them. First, they need a comprehensive nationwide science and research policy and development plan. In Iran, we have suffered much from duplication of tasks. Frequently, several institutions have the same function, tasks are duplicated and money wasted. There is a continuous struggle to attract personnel and funds from the small existing supply and consequently no institution has adequate resources.

Documentation is not an exception to this rule. Eighteen months ago, Dr. Mohajir was in Iran for one month to study the establishment of a National Documentation Centre. Only in the week before he left, did he become aware that IRANDOC had been established. In turn, we did not know he was making such a study in Iran.

The national science and research plan mentioned previously should make a clear division of responsibility among various institutions, so each one knows its exact limits.

Communication is a very important factor. Not only is it necessary that each institution know its exact duties but also the current and past activities of other science and research institutions. They should make regular reports to publicize their activities to the government, to the public and other institutions.

A central government organization should control and coordinate these scientific research activities. Pakistan and Turkey are fortunate to have established their central organizations years ago. Iran was late in establishing its central coordinating body. The Ministry of Science and Higher Education was founded in 1968 and its Institute for Research and Planning in Science and Education, now in charge of coordinating all scientific and educational research, in 1969.

Research, coordinated or not, needs sources from which the necessary information can be supplied. Documentation centres and libraries are the proper sources of this information. A national central body must insure the availability of all national resources and provide access to foreign sources. Our three documentation centres are such national central bodies, but their approaches to providing information differ. PANSDOC has no library, whereas IRANDOC is now building the Iranian National Science and Social Science Library. But, a library can never be self-sufficient. Documentation centres and libraries must cooperate and rely on the resources of other libraries. And to cooperate efficiently, certain tools are needed. Of first importance are union lists and union catalogues showing the exact holdings of each library. Without them, no one knows where to obtain material. IRANDOC is preparing the Iranian Union List of Serials in Science and Social Science, and TEBROC is preparing the Iranian National Union Catalog. An interlibrary loan code is necessary to clarify loan conditions and the relations between borrowing and lending libraries. IRANDOC prepared an interlibrary loan code and proposed it to various special and university libraries who met in September 1969, twenty four of them, and agreed to cooperate. Other librarians have been encouraged to join.

Also, international cooperation is necessary, especially to help developing countries use the rich library resources in industrialized countries. Developing countries need to cooperate with each other, also. The recommendations of the "Working Group on Scientific Information in Developing Countries" at the 3rd session of the

ICSU-UNESCO central committee to study the feasibility of a World Science Information System are useful.[2]

In developing national and international cooperation automation is helpful since it speeds information transfer and retrieval.

Areas of Cooperative Development.--Let us consider specific areas in which cooperation can be developed. In view of the very close relations between Iran, Pakistan and Turkey, and the facilities provided by RCD, I sincerely hope that we can start cooperating soon in the following areas:

A. Education and Training.

1. Improving and coordinating present library school curricula. Pakistan has six or seven departments of library science, Turkey two, and Iran three. Their curricula should be improved and coordinated so the graduates can be used effectively in both libraries and documentation centres. Courses should meet the real needs of the libraries in which the graduates work.

Also, careful consideration should be given to course level and content. In Iran, one library school offers a Master's degree curriculum, another a Bachelors' degree, and the third, junior college courses. Obviously the content of such courses as classification should differ in the three schools.

2. Strengthening the present schools to meet documentation centre needs. Traditionally, library schools

recruit most of their students from the humanities, and this may be a reason why scientific institutions are often unwilling to allow librarians to manage their information centres. Young science graduates should be encouraged to attend library schools.

Also, library schools should offer more courses on information science. Only one is offered at the University of Tehran now. A course on the bibliography of science was offered independently in the Department's first year but is now integrated into the Advanced Reference course. A course on abstracting and indexing has been eliminated completely, and many students try to avoid the present information science course because of their humanities backgrounds.

3. Soon we must create information science schools, independent of library schools. Probably a regional school, sponsored by the RCD country governments and administered jointly by the three documentation centres, should be considered.

4. Good information science schools exist in the U.S.A. and U.K., and young science graduates should be sent to them. We will do this in Iran, if we can find suitable science majors with good English.

5. Young information scientists should be sent to industrial firms for in-service training and actual work.

B. Administration.

1. Staff exchange among the three documentation cen-

tres is quite important and at the same time possible, not only at the information scientist level but also at the administrator and technician levels. Such experience will widen their views and increase their understanding of current trends.

2. Cooperative equipment selection and acquisition must be considered. A division of responsibility for obtaining expensive material may be desirable. If Institute of Scientific Information computer tapes are purchased by one centre the others can purchase other material instead. Probably CENTO and UNESCO project assistance can be obtained as well as the assistance of other foreign sources.

3. We can obtain foreign assistance for certain projects with world value.

4. Effective cooperation depends on effective communication. Besides traditional means like correspondence, exchange of newsletters and other publications, we must use such modern communication means as telex, telephone and cables extensively. So far, we have used only cables and letters, used them rarely, and for administrative purposes only. The microwave relay system being installed between the three countries should improve communication greatly and so should telex installations.

C. Publication.

Cooperative publication efforts can be undertaken and foreign assistance sought for them.

1. A complete inventory of printed resources available in the three countries would interest UNESCO. This would involve compiling union lists of serials, patents, standards, documents, books and audio-visual materials. It could be published in national as well as subject parts, each country responsible for its own data, but all presented in similar format. This project would be similar to the FID "Periodicals for Industry" series published separately by each country but all under the supervision and style of FID.

2. Also, we can consider an inventory of current scientific publications in each country. This could be done by producing contents pages, indexes and abstract journals, each publication useful for specific purposes. Contents pages will have language limitations since they will reproduce actual periodical contents pages, usually in the national language, and not very useful elsewhere. IRANDOC's contents pages reproduce exactly the title pages of Iranian publications. Index and abstract journals should be published in English so they can be used in other countries. Just before the Iranian New Year IRANDOC published the first Persian edition of the Abstract Bulletin, and the English edition will be published soon. Such publications should cover not only periodicals but also government publications and reports to which access is usually difficult.

3. Publishing a three country inventory of referral places and people is another useful project for which

foreign assistance can be sought. It could include directories of libraries and research projects, who's whos in science, library and information science and other directories and subject bibliographies. IRANDOC has already started several of these projects.

D. Services.

Service is the very reason for the existence of a library or information centre. Services should be developed and enlarged by adding modern methods and equipment.

1. Among conventional services, we can develop reference by using the resources of all three centres to answer reference questions.

2. Subject bibliographies should be prepared not only on request, but also on our own initiative, and those most useful should be published.

3. Extensive photocopy and microfilm service should be provided to give access to materials in any part of the world.

4. Reading room facilities, open stacks, and assigned study carrels are among the services which we should provide to researchers.

5. Interlibrary loan is an important way of making resources available to users.

6. Translation service is needed in countries with few national language scientific publications. Fortunately most of our scientists read an international language. English ranks first among foreign languages and

Pakistan's work is easier since their teaching language is English. Most translations are not from English into a national language, but from a less known to an internationally known language. The services of such translation agencies as the European Translation Centre, Amsterdam; the National Lending Library for Science and Technology, Boston Spa; the Centre Nationale de Recherche Scientifique, Paris; and the Commerce Clearinghouse, Washington, should be used for translations.

Use of modern communication means is essential to speed up information transfer. When the microwave relay system can be used for three country communication, then long distance telephone calls and facsimile page transmission will be practical.

In providing modern services we will certainly use computers to store and retrieve information. Also, internationally available computer services should be used. For example, we can use Medlars, Chemical Abstracts, Engineering Index, ISI and other computer tapes. Preparing a union thesaurus for the three centres will be useful, but not essential. Since each of these commercial services has its own thesaurus, we can search their tapes on a free text basis, by which each subject is searched under various synonyms.

Use of commercial services implies a need for automation. Automation will be used primarily to provide SDI service and bibliographic searches, but also in acquisitions, indexing, cataloguing, abstracting and taping bibliographies.

E. Processing.

In developing book selection and purchasing we must consider subject division of responsibility. Each centre may emphasize specific subjects with the two other centres relying on that centre for service in those areas. IRANDOC might specialize in the oil industry with PANSDOC and TURDOK relying on us in this field. This subject division would have a great influence on the selection and acquisition policies of each centre but may be limited to advanced material, like specialized indexing and abstracting periodicals.

To facilitate duplicate exchange, a regional centre should be established. It would be responsible for obtaining duplicate lists, duplicating and distributing them to libraries. Then the offering and requesting libraries would contact each other. In addition, it can extend its activities to the regular exchange of current publications.

Conclusion.--Although the development of each centre is determined by the general science and research policy of its own country, the three documentation centres have very good grounds for cooperation in several aspects of their activities and I hope steady progress can be made toward full cooperation, without waiting to involve centres outside the RCD area.

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[1] Kesavan, B.S. "Organization of National Documentation Services in India", Library Trends (January 1969), pp. 231-244.

[2] "Science Information", ICSU Bulletin (August 1969), pp. 24-30.

THE INTERNATIONAL FEDERATION FOR DOCUMENTATION: ITS PRESENT AND FUTURE PROGRAM

by A.R. Mohajir

Introduction.--FID is an international non-governmental organization associating the leading information centres and libraries in many countries of the world. The Federation, established in 1895, is one of the oldest international organizations. Established at the outset as an International Bibliographic Institute with the relatively narrow goal of compiling a Universal Bibliographic Catalogue, it has developed into an international federation which aims to promote and co-ordinate scientific information activities on an international scale.

Present Activities.--The FID Working Program adopted in 1959 envisaged as the major objectives, along with further UDC development, work towards the solution of such urgent problems as:

a) improving the quality of primary scientific publications and of their preparation methods;

b) developing the system for compiling and using secondary publications as well as effective co-ordination between national abstract services;

c) developing the methods and means to overcome the "language barrier;"

d) developing the methods and means to mechanize information processes; and

e) developing the general theory of classification.

In conformity with the 1965 program, the Federation tries mainly to promote the theory of informatics and perfect information practice. The Federation has charged its General Secretariat and committees with the task of executing its program. There are three groups of committees: those concerned with elaborating the theory of informatics, with information service practices, and with UDC revision and development.

The group working on the theoretical aspects of informatics includes: Committee on Classification Research (FID/CT), Committee on the Theory of Machine Techniques and Systems (FID/TM), and Committee on Linguistics in Documentation (FID/LD). Theoretical activities are mainly concerned with elaboration of the theoretical foundations of informatics, the study and evaluation of linguistic and lexicographic problems, and development of means for solving these problems for information systems. The following are among the problems with which the committees are concerned: (a) elaboration of the theoretical basis of scientific information to provide an orientation for research in scientific information activities; (b) development of the general theory of classification, including comparative analysis of classification systems; (c) elaboration of the theoretical aspects of the mechanization of information retrieval; and (d) overcoming the "language barrier"

Practical information work is dealt with by the Committee on Operational Machine Techniques and Systems (FID/OM), Committee on Information for Industry (FID/II), Committee on Training of Documentalists (FID/TD), and Committee on Developing Countries (FID/DC). Their main stress is on the development and evaluation of optimal structures of information systems, the mechanized means for information processing and transmission, and the elaboration of terminology. Specific committee tasks are to organize research towards the optimal methods for recording scientific and technical information; to evaluate information retrieval systems; to provide means for transmission of scientific information, particularly in industry; to assist teaching and curriculum development and to help in textbook preparation; to investigate problems, draw up recommendations, and render all possible assistance to promote library and information activities in the developing countries.

Finally, the UDC committees headed by the Central Classification Committee continue their work to promote the broader application of UDC, update the tables, and use UDC in mechanized information retrieval.

Topical as these problems are, FID research results have been insufficient. Compilation and implementation of these programs were carried on without adequate regard for the general Federation objectives, there was only slight coordination between committee programs, and there was virtually no plenipotentiary coordinating organ to direct their activities. Often projects were not completed by the deadline and sometimes research was not carried out. Also, FID maintained inadequate contacts with other international scientific information organizations (UNESCO, ICSU-AD, IFIPS, ISO). These factors have kept the Federation from becoming the leading international organization in scientific information.

Recently several international organizations have become interested in scientific information. Huge sums are being spent in various places to establish parallel information services and to investigate similar problems. FID must state the principal problems of scientific information and coordinate its program with that of other organizations in order to reduce wasteful duplication.

In spite of FID shortcomings, its efforts are successful in establishing a world-wide forum of specialists, and its membership has grown to include 48 countries.

Future FID Activities.--With the involvement of growing numbers of scientists and the rapid utilization of natural resources, the rapid progress of science and technology is inevitable. Under such circumstances, unprecedented growth of scientific and technical literature has taken place. Therefore, information work must be considered a special variety of scientific labour. Another feature of progress is the continual reduction of the time lag between a scientific discovery and its practical utilization. This calls for more rapid information exchange. Also, the number of multi-disciplinary problems is growing, and the trend toward integration is increasing. Up-to-date methods of disseminating and retrieving information must be developed. From such pressing demand, the new discipline of informatics has emerged.

Informatics will help to eliminate our "information crisis". The main tasks of informatics have a common and international character. They can be stated as optimizing the structure of national scientific information networks, establishing national networks and then a world-wide network of scientific information, enhancing the efficiency of scientific information activities, elaborating and implementating the methods for overcoming the "language barrier", and developing new information transmission systems.

Federation Objects.--FID is now concentrating its efforts in four directions:

a) to determine the main research trends in scientific information and to coordinate this research internationally,
b) to optimize national and international information systems,
c) to define the criteria for evaluating the efficiency of scientific information activities, and
d) to search for new ways of cooperating with other international organizations.

These efforts will enable FID to study

1. The theoretical basis of informatics,
2. Dissemination thru publication and reference service,
3. Information retrieval systems and classification,
4. Linguistic problems, and
5. Optimization of national and international systems.

Theoretical Basis of Informatics.--Information activity promotes the advancement of science and technology. The theoretical elaboration of scientific information relates to research in this field and assists in evaluating its efficiency. The theoretical aspects of informatics, particularly information retrieval theory, classification theory and definition of the borderlines between informatics and related disciplines are of paramount importance.

Dissemination Thru Publications and Reference Service.--Most information systems use both conventional and modern devices. The conventional systems, however, are increasingly inadequate.

Publications should be studied and improved. For primary publications, subject scope should be narrowed and publication lag reduced. Standardized preparation methods should be used, and publication should be classified centrally by a unified international system. Publication should be supplemented by deposition of data collections in a central location. An optimal system of secondary publications should be developed; principles for compilation of abstract and current awareness journal subject indexes should be experimented with, and index automation should be increased. Close cooperation between FID and UNESCO, ISO, ICSU/AB, and a clearcut statement of the tasks to be accomplished by each one is needed. Plans are being made to organize unified national networks of reference-information collections (RIC) based on coordination of the existing library files. An international network will be based on national networks and investigations are being made concerning the combination into integrated systems of the functions of preparing publications, selective dissemination of information, and servicing.

Information Retrieval Systems and Classification.--Methods of evaluating the relevance of the document to the information request and the comparative efficiency of information retrieval languages are important problems. In collaboration with IFIPS and IFLA, FID is planning to develop document retrieval information systems, research projects on information retrieval languages, thesauri construction in national information system languages, etc. Since patent and standard indexing has its own characteristics, it requires separate attention.

Research will be conducted on information problems using both computers and conventional means. The most common indexing systems are the UDC, adopted in more than 50 countries, and descriptor languages.

UDC has a number of shortcomings. UDC table revision must be speeded up and simplified, the tables must be published in the languages of developing countries, indexing techniques must be elaborated, science classes must be updated, UDC must be compared with other systems, and broader application for information retrieval and index compilation must be planned.

Linguistic Problems.--A major obstacle to science advancement is the growing "language barrier". According to UNESCO, 50% of scientific publications are written in languages which half the world's scientific community cannot read. Therefore, much information remains unused. Machine translation on the basis of an intermediate language supplemented by postediting could be a feasible method for reducing this problem.

With the help of UNESCO, ICSU, IFIPS and ISO, FID should solve the machine translation problem. International terminology for informatics, machine processable language subject indexes connected with bibliographic citations in primary and secondary publication, and multilingual dictionaries for indexing are some of the compilation problems requiring attention.

FID must solve linguistic problems relating to automatic text processing, develop artificial languages and classifications for automatic abstracting and indexing, and develop general methods and algorithms of transcription, transliteration, and code conversion.

Optimizing National and International Information Systems.--FID must devote attention to the problems of the optimal organization of national and international information networks. Despite work to create such networks in many countries, FID must also work in this field. The experience of many countries in optimizing national scientific information networks should be studied as well as the role of special libraries within the system. Jointly with UNESCO, an international scientific information system should be established and an "International Year of Scientific Information" observed. The specific information needs of scientific establishments should be studied as well as the training and skill-improvement of information specialists. Recommendations on specialities, curricula, and training forms should be made as well as on textbook and guide writing, international summer schools, and teacher exchanges.

THE SMITHSONIAN INSTITUTION

by Stanley Kovy

The Smithsonian Institution, Washington, D.C., was founded a century ago to act as a research centre to disseminate knowledge. The original grant came from a British gentleman named Smithson. Through government assistance and private grants the Institution has grown until it is now the U.S. National Museum.

The Smithsonian is made up of many sections, including History, Art, Science and academic information, and their collections are large. In Science there are 50 million items, in History 200,000, in Art 150,000. The collections grow at the rate of one million items per year. Various buildings house the collections, The Museums of History and Technology, The Museum of National History, The National Portrait Gallery, The National Collection of Fine Arts, and the National Air and Space Museum. Our next collection will be the Hirschorn Museum for art and sculpture and we have recently acquired the large Post collection of Russian artifacts. The Smithsonian Tropical Research Centre is located in Panama and the Smithsonian Astrophysical Observatory in Cambridge, Mass., worked closely with NASA in developing the space program. There are 300 research scientists.

There is no reason to collect data unless you can respond to inquiries and use the data. Five years ago, Smithsonian decided to use automation in handling its large volume of data, in serving researchers, the Institution itself and the public. Since that time a small staff and a computer have been acquired and an automation system introduced to facilitate data use. Now we can respond to such inquiries as, "What type of specimen existed in certain areas prior to 1945 (atomic bomb) in contrast to the picture today?" and "What has DDT pesticide done to various specimens?" Our queries can answer the "what" (type specimen), "when" (time period) and "where" (geographic) questions. To analyze these collections has become of prime importance since we have become aware of the environmental problem.

Progress had been made in many areas of science, information retrieval and administration, but normal financial problems have limited it. In the administrative area we have reached a satisfactory level.

In the information retrieval area we have just completed a pilot project to evaluate the possibility of automating the collections of specimens. During the past three years we have developed this system to collect, record and disseminate information from these collections readily. The total system became operational two months ago. For the pilot project, we chose three collection areas, bird, rock, and crustacea data. They were selected because they were considered unique. If they could be processed then other collections could also, with only minor modifications. We have entered limited amounts of data from each of these areas, enough to prove the system feasible.

In the scientific area there is some automation but only a little in pure research. In the library area, the acquisitions process has been automated and a work-in-file inventory is maintained. Also, we create purchase orders and catalog cards. The Library of Congress and the Defense Documentation Centre have automated more steps in this area.

Now I would like to talk about systems and equipment, but first I must distinguish between punch card and computer equipment. Punch card equipment includes those devices which process Hollerith cards and are not programmed internally, but only externally with plug board control panels. A computer is programmed internally via coded instructions fed into the machine.

Systems may be manual or automated or a combination of both. No matter which is used, they should be reviewed frequently for effectiveness. A work flow analysis is an effective tool with which to find duplicated effort, bottlenecks or irregular data flow.

People automate for many reasons:

1. The large volume of data to be handled,
2. To shorten the time required to respond with results,
3. The cost of data processing (manual versus automated), and

4. To improve their status.

Automation should be a helpful tool, not a burden. Automating a bad manual system will only create more problems. More time spent evaluating a system prior to automating it can be helpful after automation. The automation decision involves deciding:

(a) What do you want from the system today and in the near future?

(b) How much can you afford to spend to get these results?

(c) Can the automation program be inaugurated in stages?

Usually automation brings a form of standardization. You should look for areas of similarity since you are dealing with three countries and communicate ideas whenever you can. Data collection is of prime importance and can be carried out in various ways:

1. By using a key punch or key tape device where data is manually taken from a codesheet or document,
2. As a by-product of using paper tape devices, from purchase orders, catalog cards, etc.,
3. By using optical scanning devices which read LC forms, mark sensing devices, etc.,
4. By using various other typewriter-type devices which may be hooked directly to the computer.

Once you have collected some data and have a file, you can process it according to the system design.

Now a few words about assistance. If you are considering automation you should contact the local computer representative to see the services offered. With only one manufacturer represented in your countries, it may be difficult to get good service.

Also, you should try to acquire information from government agencies or industries with past experience in your area of interest. An agency doing your type of work can be asked to make their computer programs available. Don't hesitate to pursue this approach and think about the "nationalism" aspect later. In this way many months and dollars can be saved and new ideas found. Where manufacturers have "generalized" system packages, they too can be obtained and used with or without modification.

THE SPECIALISED INFORMATION CENTRE

A Paper Received from Aslib

Preface

Since 1965, the United Kingdom Office for Scientific and Technical Information (OSTI) has supported a small number of Specialised Information Centres. Their function is to acquire all material likely to contain information interesting to users working within their specialised fields, to arrange for its evaluation by specialists, and to organize it for retrieval and dissemination, for example, through current awareness publications, specialised bibliographies, answers to inquiries and "state-of-the-art" reports. The main purpose of OSTI support has been to facilitate the experimental establishment and operation of these centres and subsequently to obtain reports on their development and assess the extent to which working scientists use such a centre and can be persuaded to participate in its operations. As these experimentally supported centres have become better known, an increasing number of inquiries has been received from scientists and institutions interested in establishing centres in other fields, so OSTI commissioned from Aslib a study designed to make available the substantial amount of experience now collected. Five centres, including one supported by the Medical Research Council, were visited by an Aslib team in early 1969 and, following study of their annual reports, a summary of their experience has been prepared.

The summary's objective to assist possible sponsors of a new centre to judge its usefulness, its prospects for earning income and the suitability of the proposed methods; to indicate what problems may arise during its establishment; and to assess the resources of manpower, finance and accommodation required for different levels of activities and services. The report outlines in sequence the problems faced by the existing centres, comments upon the relative advantages and disadvantage of the different approaches followed and provides factual material describing each centre's operation. This material should give general answers to many questions concerning the establishment of new centres and permit more informed discussion during any subsequent visits to them.

Introduction

The Purpose of These Notes.--These notes are intended for working scientists who wish to set up and operate Specialised Information Centres to serve their own specialised science areas. Their purpose is to set out the different tasks to be performed and the decisions that must be taken, to discuss the problems of Centre operation and suggest some of the solutions. They are not a 'how-to-do-it' guide. A reading list is attached, to which reference should be made for fuller discussion of particular aspects of operations. They are not intended for, although hopefully they may interest, professional information workers. The statements made do not necessarily represent current practice in any particular centre.

What is a Specialised Information Centre?--A Specialised Information Centre attempts to meet as many as possible of the needs for information on a particular specialised topic of the workers interested in that topic, regardless of their location. "Meeting the needs" may mean collecting all documents relevant to the topic, indexing and storing them, disseminating the information they contain through current-awareness services and other devices, supplying copies of the documents on request and operating a question-answering service. It should also mean evaluating the collected information and producing critical and state-of-the-art reviews, but in present practice this is seldom done, although it still should be borne in mind as a goal worthy of attainment. Much of Specialised Information Centre activity is very similar to that in a normal special library or information department. The major difference is that whereas a normal information department is run for the benefit of a group of workers in the same organization or at the same geographical location, a Specialised Information Centre serves a widely-distributed, often international group whose only link is one of common scientific interests. Another important difference is that whereas the majority of information departments are supported financially by the organizations they serve, a Specialised Information Centre must at some stage in its life meet the necessity of supporting itself from the proceeds of its services. Most, but not all, Centres tend to be interdisciplinary, and, because they operate in newer areas of knowledge, are relatively small in terms of numbers of documents handled.

Deciding to Establish a Centre.--The only justification for establishing a Specialised Information Centre is that the workers in its field need it. This sounds like a truism, but it is very easy to assume that one's own experience is typical of that of one's fellows. Before deciding to establish a Centre, the need for its existence should be clearly demonstrated. This process can be combined with the collection of information which will be useful in planning the Centre's activities, and is best approached in stages:

a) The area of information which the Centre will cover must be defined, in such a way that firm decisions can be made about the suitability of material offered for inclusion in it. The definition will also be helpful in describing the Centre's potential users, and in deciding the extent to which the area is already covered elsewhere.

b) The user group must be quantitatively described in terms of numbers and geographical distribution, and if possible in terms of employer group (academic, industrial, etc.). The object of this description is to get some idea of the potential demand for services, to make some estimates of the possible financial support that can be obtained from the sale of services, and to allow some sample investigations of the needs for and deficiencies in the information services presently used by the group.

c) If possible, a representative sample of the group should be studied to find out what their probable requirements for information are, what sources they already use, and what services they would prefer. This can be done by questionnaire, interview or other means, and expert assistance should be invoked in organizing it. It is not always possible to study a sample of potential users, but it is always desirable, because it is very dangerous to generalize from one's own experience. It is also easier to raise funds for establishing a Centre if one can convincingly demonstrate the need for it.

d) A study should be carried out of the existing information sources in the field. This should include coverage, overlap and time-lag of the relevant abstracting and indexing publications, a list of the journals in which relevant material may be found, and some indication of the relative proportions of journal literature, reports, theses, books, patents and so on. This must be done to ensure that reasonably adequate information services do not already exist, but more particularly the knowledge gained at this stage will affect the way in which the Centre can acquire its input information, and will give an idea of the magnitude of the Centre's task. A librarian or information officer with some experience in the Centre's field, or a related area, would be a suitable person to assist in carrying out such a study.

Operating the Centre

The Work of a Specialised Information Centre.--The routine tasks of a Specialised Information Centre can be summed up as the collection, processing and dissemination of information. The collection of information includes the acquisition of references to relevant documents and the acquisition of the documents themselves. It can also include the collection of addresses of workers and organizations active or interested in the field, details of relevant equipment, of relevant ongoing or unpublished research, and of other information agencies in related fields. Processing includes the classification and indexing of the collected material and its storage. Dissemination can be active, and include the publication of information bulletins, operation of Selective Dissemination system passing input information directly to the appropriate interested user, and the issue of abstracts and other forms of notificaiton, or passive, responding to direct requests, and including the answering of questions put to the Centre, the supply of photocopies, the referral of queries to other agencies, and so on. The majority of these tasks entail some clerical housekeeping activity, and in normal practice eighty percent of all the Specialised Information Centre's work is clerical.

Not all these activities are found in all Specialised Information Centres, and where all are carried out, they are not necessarily all intiated at the same time. The basic activity is the collection of references to relevant documents. If this is not done, then nothing else can be. Document acquisition is not essential if all that is to be offered is a current awareness service, such as a bulletin containing references, or some other sort of reference-notifying service. But without documents, the supply of copies on request is clearly impossible, and the quality of indexing based only on titles of documents may not be sufficiently high to permit operation of a very effective question-answering service.

Question-answering entails the possession of a reasonably large store of documents to search, so that, if a decision has been made not to collect documents published before the Centre's inception it will be some time before a useful question-answering service can be established, because it will be some time before enough documents have been acquired to make it worthwhile. There are a number of other arguments in favour of beginning the Centre's activities by running a current-awareness service. It is easier to publicize a current-awareness bulletin, by sending sample copies to potential users, than a questtion-answering service. The bulletin recipient can see what he is likely to get for his money and can judge its value qualitatively, whereas the potential query service user who is told that such a service exists has no basis on which to judge its value and consequently is less strongly motivated to use it. Also bearing on this point is the fact that all users have a continuing need for current-awareness, whereas the need for answers to queries arises comparatively seldom in individual users. It therefore follows that a current-awareness service is a more dependable source of income than a query service.

Before describing in detail the conduct of a Specialised Information Centre, we may now consider the order in which the various decisions can be taken and services initiated in the planning of a Centre and suggest a tentative timetable. A period of three months is reasonable to allow for the identification of the sources of information and to carry out the various pre-planning tasks outlined in the introduction. After this, active collection of references and documents can begin. During the next three months detailed planning of the Centre's activities can go forward, including firm decisions about the type of current-awareness service to offer, its format and means of production, and acquiring Centre staff and equipment. At the end of this time, it should be possible to initiate a current-awareness service, free specimens of which will be sent to all potential users already identified. With the specimens, the availability of copies of all documents notified (if this is a service to be offered) can be announced. During the first year of operation an index can be set up to assist in answering queries. If the first year's operations have been encouraging the question-answering service can be announced, either by direct notification of all potential users or by a notice appearing in the current-awareness service. Eighteen months after starting work, the Centre should have arrived at something approaching its final form and have a full staff complement. If it is ever going to be self-supporting, experience suggests it might reach this state three years later, which is about four and a half years after first beginning work.

Getting the References.--References to relevant current material can be collected either by looking for them yourself or having someone else look for them. In the first case, Centre staff can scan the primary journal literature themselves, or can search through the appropriate secondary literature, either in collections of contents pages such as Current Contents, or in abstracting and indexing journals. In the second case, use can be made of the computer-based services such as MEDLARS, CT and CBAC, ASCA and others; or the Centre can recruit co-operating specialists, either in the Centre's host organization or elsewhere, each of whom undertakes to scan a number of specified journals on the Centre's behalf. The usual solution is to combine a number of these ways of getting references, because no single method is likely to provide more than partial coverage. In practice it is extremely unlikely that complete coverage can be achieved, whatever means are adopted, but it is desirable that Centres approach comprehensiveness as nearly as possible.

Direct Scanning of Journals.--Direct scanning of primary journals by Centre staff usually results in more accurate selection of material and is generally the quickest way of getting references (the references being found very soon after publication). It also reduces the problems of getting the documents referred to, since they are already at hand. However, if the number of relevant journals is large, the cost of getting them may be more than the Centre can afford, and it may be necessary to borrow extensively from the National Lending Library for Science and Technology, or to arrange to scan some of the journal titles in the library of the Centre's host organization, which may be inconvenient. Relying on this method of getting references alone generally means missing material appearing in journals not earmarked for scanning (and a considerable amount of relevant material may be expected to occur in these "fringe" journals). Also, there may be difficulties in scanning journals in unfamiliar languages.

Use of Abstract Services.--Using abstracting and indexing journals is unsatisfactory as the major means of reference collecting, because there are often considerable delays between the publication of an item and its abstraction, and this sort of time-lag is not acceptable in a current-awareness service. However, because of the dispersion of relevant literature, use of these secondary services is essential as a backup to the main means of reference collecting, and can also be helpful in covering foreign language material. If selection of material on the basis of titles is found to be satisfactory, then services like the various issues of Current Contents, which reproduce the contents pages of a large number of journals, are very valuable, and generally have a very small time-lag between publication and notification. Searching abstracts on an item-by-item basis takes much time, particularly if the abstract journal is large, and the usual practice is to use the indexes to find relevant material; this is quite effective, but it means that some relevant material will be missed, because, regardless of its coverage, no more can be got from an abstracts journal than its index will allow. Subscriptions to the major abstracts journals are almost certain to be beyond the financial reach of a Specialised Information Centre, and arrangements should be made to search them either in the library of the host organization or in a national library such as the National Lending Library or the National Reference Library for Science and Invention. Allowance must be made for the cost of travelling regularly to the libraries.

Use of Computerized Service.--Most Specialised Information Centres use the available computerized information services, such as MEDLARS, CT/CBAC, ASCA, etc., chiefly by submitting profiles describing their interests, in terms of keywords or whatever indexing devices are appropriate, and receiving regular output in response. Like the use of abstract journals, this is a useful way of reinforcing other methods of reference collection. It is unlikely that any one service will completely cover a Centre's interests (and if it does, then why do you need the Centre?), so comprehensive coverage by this means alone is not possible. The construction of an adequate profile can be difficult, and in some areas, such as Biodeterioration, a profile constructed to achieve the maximum return of relevant material would be very costly, since a large number of indexing terms, many of low productivity, would be required to describe the area of interest. Many machine services are based on journal article titles, and therefore their usefulness depends on how good the titles are in that field.

Co-operating Specialists.--The use of a panel of co-operating specialists, who between them scan most of the relevant journals, has much to recommend it. A number of specialists, by definition members of the Centre's potential user group, can be recruited, and their geographical locations selected so all the languages in which relevant material is published can be covered. Often it is difficult to ensure that all relevant journals are covered adequately, because each specialist should be allowed a fairly free choice of what he elects to scan. However, theoretically, a well-chosen panel should be able collectively to achieve something approaching completeness, including coverage of report literature. Where possible, each journal, particularly those most important, should be scanned by at least two specialists, to allow for differences of opinion and interest. The process of notifying the Centre of relevant material should be made as painless as possible, and the specialists should not incur any personal expense, either for postage or the cost of journal acquisition. As a reward for their efforts, Centre services should be made available to them at a reduced charge or free. Disadvantages to this method of getting references are the labour of recruiting a suitable panel, the clerical effort of supervising their activities and the necessity of stimulating or replacing the members. Monitoring their output is essential, because agreement to act as a co-operating specialist is by no means the same as actually co-operating. One of the advantages of using co-operating specialists is that a scientific user community is likely to place more reliance on a service in which selection is done by fellow-scientists than on one in which the selection is done by an information officer.

Choice of Means.--No single method of getting references is completely dependable on its own. What mixture of methods is finally adopted depends on the Centre's circumstances, the most important things to consider being the degree of scatter of references among journal titles, the speed with which the Centre wants to start operations, and the speed with which information is required to be disseminated. A wide scatter of references means that journal purchase is out of the question, so abstracting and indexing journals or co-operating specialists must be used. Some abstract services are slow in giving references, so if speed is important, they are useful only for backup. A co-operating specialist panel takes some time to organize and needs frequent prodding to work well. If there is any general rule for deciding how to acquire references (or doing anything else in a Specialised Information Centre), it is to do whatever is easiest, provided it satisfies the need; the object is always to reduce clerical labour and financial outlay to a minimum.

Getting the Documents.--Documents are acquired by direct purchase of the journals or other volumes containing them, by photocopying documents seen or scanned in a host library, by loan from the National Lending Library, or by approaching authors directly for copies. Purchase is likely to be too expensive for the normal Centre. Writing to authors for reprints is a frequently used method, with a number of advantages, and even if not the main method of collecting material should be practised to some extent. The act of writing to such authors is a useful method of publicizing the Centre and frequently results in receipt of unsolicited copies of other relevant papers. If a system is adopted by which the notification of a reference to the Centre can also be used, without rewriting, as a request to an author for a reprint, considerable clerical work can be saved, although care must be taken to avoid asking an author for the same reprint twice. Among disadvantages of this method are the tardiness and incompleteness of response; often it takes two or three months to get a reprint from an author and only about 80% of the authors approached will respond. In any case, some documents must be acquired by photocopying, either of journals held in the library of the host organization or of journals borrowed from N.L.L. In both cases, the Centre may technically be committing a breach of copyright.

Only a proportion of the documents acquired will ever be used, either to fill requests for copies or in answering queries. However, it is impossible to forecast where the demand will fall, and in principle if a Centre collects documents, then it should keep one copy of every document notified to users.

In acquisition of both references and documents, routine must be established for checking duplicates. Whatever methods of acquisition are adopted, inevitably many cases will occur of the same reference being notified to the Centre. Some system must be created for identifying duplications and avoiding the resulting duplication of clerical effort.

Current-awareness.--Current-awareness services are intended to inform scientists of the existence of newly-available documents likely to be relevant to their professional interests. There are many ways of doing this, including displaying or issuing the documents themselves, but so far as Specialised Information Centres are concerned the usual method employed is the regular distribution of references to the documents, with or without extra information. Points requiring decisions, roughly in order of importance, are the degree of selectivity of distribution, the nature of the document notification to be given, whether any classification or indexing is to be included, how the service should be produced, the frequency and method of distribution and its price to the users

Types of Service: SDI and Bulletins.--From the user's viewpoint the ideal current-awareness service would be one tailored to supply him with all items of information relevant to his own interests, with no irrelevant items included. Services intended to approach this ideal, usually known as Selective Dissemination of Information (SDI), generally operate by matching document index entries against user profiles made up by indexing the users' interests in the same way as the documents; when a match occurs between a document and a user, the user is sent a notification of the document's existance. The clerical effort of running such a system is considerable, and this, coupled with the difficulties of maintaining the profiles, and the limited success so far achieved by some SDI services, means that such modes of operation are usually unsuitable for Specialised Information Centres.

Group SDI, based on matching broader profiles representing the interests of small groups of workers against indexed documents, is more feasible, but still means a lot of effort. The geographical dispersion of Centre users is likely to mean that very few suitable groups of co-workers can be identified. The next step up the selectivity scale is, in effect, dissemination to the need group represented by the users of a Specialised Centre, and the usual method is to issue a bulletin at regular intervals notifying all new material the Centre considers relevant to the group's interests.

What to Put in a Bulletin.--Bulletins may be produced in book or pamphlet form, printed on both sides or one side only; they may also be issued on index cards (standard or edge-punched), 80-column punched cards, or in a machine-readable form. Anything other than the printed-both-sides form suggests that the bulletin items can be filed and subsequently searched if necessary, in other words, that it is a retrospective index as well as a current-awareness device. As a current-awareness device, the bulletin should contain sufficient information about each document to enable the user to decide whether or not he needs to see the original and also to enable him to get a copy of it from either the Centre or his own library. A minimum citation should consist, for journal items, of the title, the author(s)' names, the journal of publication, volume, page numbers and year. The citation should be unambiguous and easily understood, so, if journal titles are abbreviated, some accepted standard such as the World List or the BSI Standard is used. Titles of notified items are necessary as indicators of content; in some fields, they may not be sufficiently precise or meaningful to serve this function, and it may be necessary to add information. What is added can range from a string of keywords, through a rewritten title, to an indicative abstract. Anything added will obviously involve extra effort, and again the least amount of work should be done consistent with achieving the goal. It is not known with any certainty what the most effective relevance indicator is, but since words syntactically arranged are more palatable than unstructured collections of words, it is possible that a rewritten title or a brief abstract is more effective than a simple string of keywords. Where keywords are used, it is advantageous to draw them from a previously established list so the same thing is not described on different occasions by different words. This will also permit the keywords to be used in constructing indexes to the notified material.

Bulletin Management.--Whether or not the bulletin contents should be arranged in a classified order, or any order at all, depends on how many items appear per issue. If there are only a hundred or less items, and they have an equal chance of being of interest to users, then there is no reason to organize them under subject headings, because the individual user can scan them all. If more than a hundred items are included, then the possibility should be considered of shortening the amount of scanning by arranging the items under carefully chosen headings, so any one user need look only at those sections likely to be interesting. Of course, subject heading use means the average user will miss some relevant items because they are under unscanned headings. This can be guarded against by the rule that, where a choice of headings exists, one type of heading will have priority; for example, that "material tested" will take precedence over "means of testing".

Indexes.--When reference lists are produced in bulletin form there is a temptation to add indexes. If the bulletin is intended solely for current-awareness purposes, and the number of references per issue is small, there is little reason to add any indexing. If, however, the bulletin is intended also to be used for retrospective searching (and some users will use it this way, regardless of its suitability), some indexing is essential. An author index can be provided easily. If keywords are assigned to documents when they are received, whether or not they appear with the item notifications, then a keyword index can be issued, either with each bulletin issue or in regular cumulations. Keyword indexes are easier to produce if some simple card punching and sorting equipment is available, or they can be produced with more effort by using standard index cards. If the Centre has access to a computer, then keyword-in-context (KWIC) indexes, or even "articulated subject indexes" as used by the Intestinal Absorption Centre at Sheffield become practicable. All subject and title indexes require considerable effort to construct, so once again the rule is to produce the simplest index that will fill the needs of the user group reasonably well. The inclusion of indexes is preferred by libraries, and as they constitute an appreciable section of the market for Specialised Information Centre productions, it is worth trying to please them.

Producing the Bulletin.--A bulletin's physical appearance has a profound influence on its acceptance and use. The more polished a production it is the more likely it is to be taken seriously by the user population, so it should be produced in the best possible way the Centre can afford. The bulletin is the Centre's shop-window, the first part of Centre activities seen by the consumer public, and if it looks second-rate, shoddy or amateurish, then there is a tendency to assume that everything else about the Centre shares these qualities. The cheapest way of printing a bulletin is to cut wax stencils on a typewriter and run them off on a mimeograph. Advantages of this process, apart from economy, are that the typing and printing can be done by any competent typist, and the whole process can be carried out in the Centre's offices. Disadvantages are that, although good work can be produced, at its best, duplicated material is only second rate, and generally only one side of the paper can be used. A much more acceptable result can be achieved by offset lithography, and although the initial equipment is considerably more expensive, running costs are comparable with ordinary duplication costs. Depending on the equipment available, masters can be made directly on a typewriter or by photographic means, from an original copy. If the master is made on a typewriter, then the typography is limited to the type available on the machine; this is uneconomic of space, and means that layout alone must be used to emphasize any parts of the entries, such as authors' names or journal titles, which should be given prominence. It also looks monotonous and this makes it less acceptable to users. Appearance can be improved by using preprinted headings for the front page and for the headings of different sections. If plates can be made photographically, then section headings made on a typewriter with a different face, or by using Letraset, can be stripped-in. If photo-reduction is available, then a reduction ratio of about 40% gives a more readable product, which is also more economic of space. An ordinary photographic plate-making machine can be used to compose a page of the bulletin by shingling index cards and photographing them in page-size sets(as was done in the pre-1959 issues of the bulletin issued by the Biodeterioration Information Centre), although this is difficult. Some existing bulletins are made up by photographing computer printout and transferring it to offset masters, but the quality of the end product is almost entirely dependent on the quality of the printout, which unfortunately, is generally low. If this method is used, the line-printer must always be kept in peak condition, and a new ribbon must always be used; even so, several runs may be required before a printout of sufficient quality is achieved. It should be noted that many people dislike text all in upper case, which is what most computers produce, but in practice bulletin users accustom themselves to it rapidly.

The best quality printing is done by a commercial printer, using letterpress. Widely different quotations may be obtained from different printers for the same job, so the best way to locate a suitable printer is to obtain many quotations and check work samples. Using a commercial printer takes the work of collation and binding from the Centre and may mean that it must adher to a strict timetable of copy, proof and publication dates. Remember that the customer can cause a lot of unnecessary work and annoyance to his printer by making too many changes in copy at a late stage, by not following a timetable, and by not giving accurate or sufficiently detailed instructions about layout and typography. These annoyances are paid for by the customer, and are reflected in the quality of the work done.

Frequency of Publication.--Frequency of bulletin publication depends on how much material is collected by the Centre, how current the information must be, and how much the users are prepared to pay for the service. The user should not be presented with more references at a time than he can comfortably scan; little evidence is available on how many references this means, but experience suggests that something like a hundred is enough for any user at any one time. This does not necessarily restrict a bulletin to carrying only a hundred items at a time, because most bulletins are broken into sections, each covering a different aspect of the topic; but it does mean that, if the sections get too large, one should think about increasing publication frequency. Obviously, the more current one wants the notifications to be, the more frequently one must publish, and anything less than four issues a year can hardly be called current-awareness; even at that frequency, it will be found that many notifications are a year old. If possible, a monthly bulletin should be aimed at, but this is constrained by the additional clerical work involved in bulletin preparation, and even more by the distribution labor and costs. The more frequently one publishes, the more the postage costs, and the more clerical work is needed, and this in turn means either that the cost to the user per item notified must increase, or that the bulletin's market must be increased.

Distribution of bulletins is much more of an effort than is commonly realised. If five hundred copies are distributed, five hundred addressed envelopes must be produced. If this is done as a straight typing operation, five hundred addresses must be located, checked, and typed, and this takes a very long time. If office machines are used to produce the addresses, the time is greatly reduced, but even so, addresses must be accurate, so a checking routine is mandatory. On an address file of any length, about 20% changes can be expected annually.

Query Answering.--Many factors influence the nature and demand for query-answering services offered by Specialised Information Centres. A non-exhaustive list would include the size of the user population, the amount of publicity the Centre had received, the cost in money and effort to a user of putting a question, the extent to which the current-awareness services of the Centre can be used for retrospective searching, the Centre's reputation for accuracy and speed of answering, where and in what sort of employments the users are found, what other services the users have available, and many others. It is therefore not easy to make an accurate forecast of demand. Usually, though, the demand is overestimated; one query a day would be considered a good load for the average Centre.

Type of Demand.--About a quarter of the demands on technical libraries and information systems are for background reading material, a quarter for simple facts for immediate use, a fifth for up-to-date information on recent developments, and a fifth for description of an object, process or method. Because of the distance of a Centre from the majority of its users, the first two sorts of demand are not likely to be often met. Demands for 'everything about ...' a particular topic are rarer than is often supposed, and the majority of questions will probably be answered, in terms of documents, with less than a dozen relevant items. Scientists, particularly academic scientists, do not often exhibit a high regard for the services of librarians, so to encourage use of a query-answering service the Centre should present the image of being part of the scientific community rather than of the library world. Because scientists and engineers tend to acquire information in the ways they find easiest, rather than in the ways they know to be most effective, it is essential that the method of submitting queries to the Centre should be as easy and troublefree as possible.

How Queries are Made.--Queries can be taken directly from visitors, or by telephone or telex, or more usually by mail. Postal queries must be taken as they stand, but verbal questions should be discussed with the questioner, to the point at which both questioner and Centre are agreed on the question, because the original question asked is often not the question to which an answer is required. Written questions from regular users can be submitted on a standard form, for the convenience of both the Centre and the user. It is useful to know what, if anything, the questioner has already done in trying to find an answer. It is also useful to get an idea of what sort of answer is expected: all languages' or only English reports, theses and so on, or journal literature only, recent material only or of any date, answer as a bibliography, or copies of abstracts, or of documents, about how many documents are expected? If the process of finding the answer looks like a long job, the user should be told, and given an estimate of how long it will take. If an exhaustive bibliography is produced in the course of answering a question, then it is worth notifying other users of its existence, because sales of bibliographies on specific subjects can be a small but useful income source.

Answering users' inquiries is a specialist's job, and where possible an information officer of some experience should be used. It is unlikely that all, or a majority of, questions can be answered simply by consulting back numbers of the Centre's publications (although many can), because it is unlikely that the publications, being essentially current-awareness devices, will be organized in such a way, or indexed in sufficient depth as to permit easy and effective recovery of all the relevant information contained in them. Bulletins are necessarily organized from a particular viewpoint, and this viewpoint is often not that from which questions are put. Centres should maintain indexes to the material they hold, so they can approach the information from a variety of viewpoints. There are a number of systems of indexing and classification, without, so far as is known at the moment, a great deal to choose between them in terms of effectiveness of information retrieval, so the system which is easiest to understand and use should be chosen.

A number of Centres have opted for post-coordinate indexing systems, particularly 'peek-a-boo', as being fairly easy to understand and use, not very expensive to maintain, and economical of storage space. Like any other system, peek-a-boo requires some preliminary work before becoming operational. A controlled vocabulary (usually called a thesaurus) of the index terms to be used, with indications of the scope of the words and some rules for reconciling synonoyms, is usually considered necessary, and expert advice should be sought before starting to compile it. In thesaurus-making, six man months of effort is not uncommon. The usual amateur fault is to underestimate the value of imposing a structure on the vocabulary, and to rely on more or less uncontrolled word selection, which generally results in an overlong, imprecise and unmanageable list. General experience indicates that a small specialised collection can often be managed effectively with a thesaurus of no more than four hundred terms. Some useful references to consult are listed in the appendix.

The basic idea of a peek-a-boo system, somewhat simplified, is that a set of specially-designed cards, each printed with a numbered grid, is made up by assigning one card to each indexing term in the thesaurus. When a document is received, it is given a number, and indexed with terms selected from the thesaurus. The cards appropriate to the selected terms are then taken, and a hole punched in each at the position corresponding to the document number. To search the collection, cards are chosen whose terms together represent a question requiring answer, the cards are superimposed, and, where holes are visible through the whole small pack, the numbers corresponding to those holes are the numbers of the documents which have been indexed with the terms represented by the cards. Specially designed equipment for making the holes, and suitably printed cards, are readily available. One of the biggest nuisances in operating such a system is that of actually making the holes in the cards. This is a clerical task, but must be done accurately and promptly; if the holes are in the wrong places, the system will not work, and if a punching backlog is allowed to develop, it grows at an astounding rate. There is always a temptation to over-index documents. The thesaurus should be examined periodically to see whether it would profit from reduction or expansion, and it is worth keeping a record of how often each term is used in indexing documents, and how often in a search.

Other Indexes.--In addition to indexes, Centres should, where appropriate, keep records of the suppliers of equipment, organizations where relevant work is carried out, names and addresses of workers in the field, and so on. Such lists can be difficult to compile, but are worth the effort, since not only may they be useful in answering questions, but they also represent potential sources of information, and potential users. Access to published indexes, such as the major abstracting and indexing publications, is desirable, because it is often the case that a question does not fall entirely within the bounds of the Centre's interests, but may need material from another knowledge area in the answer; the Centre should be prepared to supply it by using published indexing and abstracting serials in the same way as would a normal special library or information section.

Referring Questions.--In principle no serious inquiry should go unanswered. If the Centre is unable to produce an answer from its own resources, which will presumably be because the question is not entirely within the Centre's scope, then at least it should make some suggestions about where the answer may be found. Therefore the Centre must be aware of organizations and individuals that are potential information sources on topics related to the Centre's own interests. One of the things by which an inquiry service is judged is its speed of response, so all questions should be dealt with as quickly as possible. If an answer can be given by telephone, then it should be. However questions are answered, it is helpful if a record of question and answer are kept, because questions are often asked more than once, and because study of the type of question put and answer given can be helpful in managing the Centre.

Supplying Documents on Request.--Requests for documents can be answered by selling, giving or lending either originals, reprints or photocopies. Originals and reprints are not likely to be held in sufficient numbers to allow their being given or sold by the Centre, and loan of documents from Centre collections is not advised, because the document is not available to the Centre staff while on loan, and because loans are not always returned; loan of copies is of course acceptable. Sale of photocopies is the general method of supplying documents on request.

The easiest, quickest and most convenient way of making document copies is Xerox or other electrostatic copying machine. However, as such machines are usually rented by paying a fixed sum, plus a small extra charge for every copy over a certain number, if the number of pages copied monthly falls below the number covered by the fixed charge, then the cost per copy obviously increases. In such cases, arrangements should be made with the Centre's host organization to use a copier on a cost-per-page basis. Other copying methods usually demand a certain amount of skill in operation, and they tend therefore to be rather wasteful of materials. Microcopies are expensive in small quantities, and are not always acceptable to users, so they should be avoided unless special circumstances make their use obligatory.

Copyright.--The law of copyright requires that persons asking for photocopies sign a declaration that the work will be used only for private study. Photocopy charges must equate to the actual cost, including operator's wage, of making the copy, the intent being that nobody other than the copyright holder shall make a profit on the published work. Therefore, supply of copies cannot be regarded as an income source.

Selling photocopies at cost seems a simple business, but there are a number of complications. Firstly, the Centre must always try to keep the amount of clerical work to a minimum, so it is desirable that users requesting copies send payment along with request. Otherwise there is a clerical routine to be gone through to get payment. This means that there must be a fixed charge per page copied, which should be notified in every issue of the bulletin, and it also means that the number of pages per item must be notified in the bulletin, so the customer knows what he must pay. A small charge to cover postage can also be requested, unless this is to be covered by the users' subscriptions to the Centre. The cost of receiving and accounting for small sums of money can often exceed the value of the money received, particularly when payment in a foreign currency involves exchange manipulation, so a fixed minimum charge must be made, usually about five shillings per document copied.

Other Centre Tasks.--As the value of the Centre's document collection becomes known, interested workers may wish to visit for short periods of time to use it. They should be encouraged, since such visits serve the Centre's aim of exploiting the literature, without involving the Centre itself in much work. Facilities for visitors should be provided, such as a quiet area for working, access to the indexes and documents and a copying facility, and if necessary, use of a microform reader. Refreshments should be available. If users are allowed direct access to documents, it will be better if they leave documents they have used for reshelving by the staff, rather than replace them themselves.

Reviews.--A Specialised Information Centre was originally thought of as being an organization which would not only provide information-handling services, but would also have an information-analysis function, providing regular critical and state-of-the-art reviews on selected topics within its scope. At the moment, no Centre offers this service on any regular basis, because not only does it require much effort, but also may demand specialist skills and knowledge not available within a Centre's own organization. One way of approaching this problem is to provide selected bibliographies on narrowly-defined topics, perhaps increasing their usefulness by including annotations or even abstracts. The Centre should be ideally placed to select topics which need such treatment, since it should not only be aware of current literature trends but also of the topics on which information is most frequently requested. As an extension of this, it may occasionally be worth attempting to commission suitable individuals to prepare critical reviews of the material included in such bibliographies. The Centre should provide the documents for review, pay the reviewer, and publish the resulting work at cost.

Centre Management

Staff Size and Cost.--Observation in research conditions and practical experience both suggest that between ten and fifteen minutes is as long as one needs in indexing a document, more time not contributing to the subsequent ease of retrieving it. Therefore, an indexer, with a modest allowance for slack time, can cope with four documents an hour. It is best if the document indexer is also the person to search the collection of indexed documents in query-answering; if possible, the indexer should also have played a major part in constructing the indexing vocabulary. If we assume that two hours indexing in a morning and two hours in the afternoon is the maximum amount that can be expected of the indexer before his performance begins to deteriorate, then we can hope for an indexing output of eighty documents a week. Making allowances for sickness, holidays and other unproductive time, one indexer might be expected to handle between three and three thousand five hundred documents a year. For the remainder of his time, he could be answering users questions and assisting in the Centre's general work. No rigid qualifications can be laid down for such a person, some experience in information or special library work is most desirable, and an acquaintance with the language and matter of science and in particular of the topic of the Centre, would be an advantage. A reasonable salary, dependent on experience, would be about £1500 initially, for a good worker.

Another professional, of higher grade but probably of similar background, is needed to organize and run the Centre's input systems, including the selection and acquisition of material, and the published output, the current-awareness devices issued. He should also be the organizer and supervisor of the Centre's clerical activities, being in fact a system manager. A suitable salary would be about £1800 initially.

These two people would be sufficient to constitute the professional element of a Centre with an input of around three thousand documents annually, and an output of four sixty-page bulletins a year, or more frequent issues of fewer pages. Few Specialised Information Centres would have input and output figures greatly in excess of these, but if this is the case, then additional personnel can be recruited. A Centre can be run effectively if only one of the professionals has experience in information work, but it is essential that at least one have that expertise. Enthusiasm is a poor substitute for knowledge; such jobs as acquisition of documents, indexing and retrieval can be learnt by non-professionals, but there is no reason to delay Centre operations so the staff can learn their job, when suitably knowledgeable people can be recruited directly.

Most Centres come into being because an energetic scientist has taken the initiative and raised sufficient support to allow a start. Generally, this system initiator remains responsible for policy decisions, but takes no direct part in daily routines. In many cases he is not paid, and since we are concerned with routine operations, we shall not consider him part of the Centre's cost.

For a Centre of the size we are considering, two clerical workers would probably be enough, at salaries around £1000 and £700. Their tasks would be varied, and might include making photocopies and punching peek-a-boo cards, as well as the usual clerical jobs. Because such a high proportion of the Centre's work is clerical, its quality is directly related to the quality of the clerical personnel employed.

Printing seven hundred copies of a sixty-page bulletin by letterpress costs about £400 an issue, and this number of copies is likely to satisfy demand on most Centres. Postage varies considerably, depending on whether or not a co-operating Specialist scheme is run, how often a bulletin is issued and how many users are overseas. £200 a year is a generous estimate of the possible cost. Telephone charges vary widely, but may be guessed at about £50. Photocopying may be estimated at £360 a year, the basic hire charge for a Xerox 914 producing two thousand copies a month, plus £40 for expendable items, making £400 in all.

Some travel will be necessary for occasional visits to other collections, conferences and meetings, and £200 a year should be allowed to cover this. Therefore, the cost of running a Centre of the size described is as follows:

Staff (adding 20% for SET, NHI contributions, etc.)	£6000
Printing (four issues a year)	1600
Postage and telephone	250
Photocopying	400
Travel in UK	200
Total	£8450

This means that the annual running cost of an average Centre will be about £8500 initially (including SET and NHI for staff), plus certain other sums which cannot be easily estimated. These would cover the cost of publicity, which would vary widely, charges for heat, light, accommodation and rates, which might be provided without cost by the hosting organization, and charges for stationery, which again might be provided free. The method of collection of input material affects cost, to the extent that if journals have to be bought, the cost of running a Centre might be increased by £15 to £20 per journal on the average. As staff require annual salary increments up to a specified level, and as rates of production and collection of documents tend to increase, allowance must be made for rising of national costs.

In addition, establishing a Centre will cost something. Funds must be available for the equipment purchase for indexing, storage, and clerical processing, advertising for staff, travel expenses incurred in visiting interested persons, possibly for the purchase of certain basic texts, and for initial advertising.

The foregoing estimates of staff size and costs assume that the Centre has been organized so that every staff member is used to best advantage. Most of the organizational effort is needed in the clerical area. A smoothly-run system should not require the professional staff to engage in any clerical activity at all, but in practice it often happens that they become involved in clerical routines, until their time is almost completely taken up by such work.

Charging for Services.--A Specialised Information Centre should aim to be self-supporting by about four and a half years after it begins operations. Therefore it must charge for its services at an economic rate. Things for which charges can be made are current-awareness bulletins, question-answering service, bibliographies on specialised topics, and any other specialist publications, such as reviews, equipment lists and specialist vocabularies, it may issue. How much a Centre can charge depends partly on whether the bulk of users are private individuals or organizations. Individual users are reluctant to pay much from their own resources, and for a recurring service like a bulletin their upper limit is probably about £5 a year. If they can persuade their employers to pay, then the limit is naturally higher. Organizations can pay more, and often expect to, and their upper limit of what would be paid for a bulletin is something like £30 a year. A balance has to be struck between charging more than the bulletin is apparently worth, and charging so little that nobody will take it seriously; the same argument applies to charging for other services. As a rule of thumb for deciding the cost per issue of a bulletin, decide what income is desired from sales and divide that amount by the number of issues per year multiplied by the estimated number of paying recipients after three years' operation. For example, to raise £2000 a year by selling quarterly issues to an estimated four hundred users, the charge must be £2000/(4 x 500), which is £1 5s 0d per issue, or £5 a year. The sum desired to be raised should be enough to cover the cost of production and distribution, including salaries of Centre staff engaged in production, plus a proportion of the costs of acquiring the input. Estimating the number of users is difficult, and the number is usually grossly overestimated. As a guess, after strenuous efforts have been made, a Centre may succeed in selling its products to about 20% of the potential user population. Once a price has been set, it should be maintained for as long as possible; price rises at too frequent intervals tend to suggest that the customers are being exploited.

For the question-answering service, the best method is to establish a small flat-rate charge intended to cover the clerical and postal costs of answering a very simple query, then use a scale of charges set on the basis of a certain sum for the first hour or half-hour of search, and a smaller sum for every subsequent half-hour. Inquirers can specify a maximum search-time to be spent on their questions. The average charge for an hour's search can be estimated by taking the cost of one hour's salary of the indexing-searching staff member and multiplying by 2 1/2. Very roughly, this would be about £2 10s 0d per hour.

Whatever charges are made, a system must be set up to check that payment is actually made, and to remind late payers of their obligations. Organizations are easier to deal with than individuals, since they do not change their addresses so frequently, and they are seldom very late in making payments. Generally the accounting will be done by the host organization, but if the Centre can handle its own invoicing, this would be helpful to both sides.

Publicity.--When the potential market for a commodity is small, as is the case with the groups for whose benefit Specialised Information Centres are run, a large proportion of the market must be persuaded to purchase the commodity in order to achieve commercial success. This means that Centres' publicity needs are greater, in proportion to their size, than those of the large discipline-wide information services. The best approach, although a time-consuming one, is the direct approach to every individual member of the potential user group. Some of this can be done as part of the routine of writing to authors for reprints of their relevant work; another useful activity is to circularize all attenders at appropriate scientific conferences. Members of relevant learned societies or professional associations can also be circularized.

When approaching individuals, a specimen of what they would get for their money is more likely to encourage subscriptions than a description of what the Centre hopes to provide. A free issue of the bulletin, and perhaps some sample answers to realistic questions, should be included with the publicity package. Some Centres have given a year's free issues to potential users so they can become accustomed to receiving the bulletin. While this tends to habituate customers to the service it also conditions them to getting it free, and consequently there is some reluctance to start paying for it.

Favourable mentions in the scientific press are always worth having, as are accounts of operations in publications issued free to industry (such as 'New Technology'). If an account of Centre workings can be got into the documentation and library journals, this is also useful, although there is never any shortage of such 'natural history' papers. In the long term, awareness of the Centre's existence and value can be spread among the student population by their instructors, but in the short term there is no substitute for the individual approach.

The importance of publicity cannot be over stressed. It is wrong to suppose that all that is necessary is to establish a Centre, and wait for relevant users to avail themselves of its services. Few scientists and fewer technologists are sufficiently aware of the value of information to do very much to obtain it. In many cases there is even resistance to information services. This negative attitude is gradually changing for the better, but at present the potential user still needs to be individually wooed.

Some Problems

Being Self-supporting.--Once a Centre is established it should be able to support itself on income derived from its user population. This is justified by considering that information is a necessary service to science and technology, like computer services or laboratory facilities, and should be paid for as a normal part of research or development expenditure. However, this view is not yet universal, and in many areas, particularly those which are not of immediate economic importance, the funds available for information are meagre or non-existent. The individual user is seldom willing to spend much of his own money on information services, so in many cases the achievement of the Centre's economic independence is likely to prove extremely difficult. This does not mean that every attempt should not be made to reach this state. Support from interested industrial organizations, from government sources or from foundations may be sought, but unfortunately, apart from earning income by selling services, there is no reliable way of getting money to keep a Centre running, and often users are either unwilling or unable to pay the market value of the services offered to them. There is no answer to this most pressing problem.

Centre Location.-- Specialised Information Centres are usually located at the place where the enthusiast who got the Centre going is located. Most of the OSTI-supported Centres are at universities, usually attached to a particular department, and this has both advantages and disadvantages. One disadvantage is that university accounting departments may not be organized to handle the collection of small payments in a variety of currencies, or to cope with reminders for overdue subscriptions. Another, more important, is that the Centre has a tendency to be identified too closely with the individual responsible for establishing it, with the danger that the Centre's continued existence depends too much on that individual's remaining at the university. One advantage is that a university generally has a large library, which may be of considerable assistance to the Centre staff.

Another is that accommodation and access to a range of clerical machinery is usually available at universities. The greatest advantage is to the university rather than to the Centre, that the Centre is a valuable teaching aid, both for bringing students into contact with the literature of their subject and for instilling in both students and staff an awareness of the use and value of information. A Centre can also be a source of interesting and valuable opportunities for research and instruction to students and staff of schools of librarianship and information science. Finally, a well-run Centre is a prestigious organization, which tends to attract interested research workers and research grants, this in turn benefiting both students and staff of the associated specialist group.

Printing and Distribution.--Printing is a problem because of the necessity of turning out a quality product with inadequate facilities, but it may be possible to locate a commercial printer who can do a satisfactory job at a reasonable price. Various alternatives have been suggested. The Ergonomics Information Centre has an arrangement with a commercial publisher who prints and distributes the bulletin and collects the income, retaining a percentage. This seems to work very well, especially as the publisher also has other journals in the same broad field, but an approach made by another Centre to the same publisher indicated that an insufficient profit margin would be available, so it is impossible to generalize on the advantages of working through a commercial publisher. Distribution is always a problem, because it is a clerical task of some magnitude, complicated by the frequency with which the addresses of subscribers change. An Addressograph system is worthwhile, but even using such a system for producing the labels does not cause the problem to vanish.

Evaluation.--Evaluation of the efficiency and effectiveness of information-handling systems is much too broad a topic to be more than touched on here. So far as efficiency is concerned, the system operator should continually be asking himself the reason for carrying out particular procedures, the usefulness of particular indexes and processes, and the extent to which each element contributes to the successful working of the whole. Knowledge of the unit cost of every product and the cost in money and labour terms of every process should continually be sought. Effectiveness, the extent to which the system goals are achieved, is in many ways far more difficult to examine, but is more often attempted, usually by questionnaire methods. Use of questionnaires to determine the attitudes of a user population, or to investigate their use of a particular product or service is perfectly valid, but requires skill and understanding in their application and interpretation. As examples, it is insufficient to ask a user how useful a service is, if no attempt is made to find out the way in which it is useful (i.e. does it fill a marginal need, or does it largely replace his pre-service information-gathering methods?); it is unreasonable to ask a person who has never experienced a current-awareness service if he likes current-awareness services; opinion and fact are often confused, and the user who states that he is aware of every important development in his field is really saying "What I don't know isn't knowledge". There is, too, a difference between asking a potential user what he is prepared to pay, finding out what he actually will pay, and finding out the real worth of what he is paying for. Probably the best general criterion a system operator can use is some measure of user satisfaction, but here it is necessary to remember that a population increasingly sophisticated by exposure to a range of information services becomes increasingly critical in its judgment of them. At a lower effectiveness level Centre managers should be aware of the real extent and deficiencies of coverage of their respective fields, their speed of response and success rate in query handling, extent of and reasons for system failures, and the capabilities and weak points of the external information systems on which they might rely.

There is no such thing as a perfect information system. Evaluation of performance should never be a once-only operation, but should be a continuing process of self-examination, criticism and improvement. The needs of the users should be considered at all times, for the user is the reason for the Centre's existence, and it is only the Centre which continues to satisfy its users, that will live.

PROGRAM

April 5, Sunday

11:00 Visit CENTO Office for voucher signing

3:00 Visit Crown Jewels, Bazaar Bozorg and Golestan Palace

8:00 Dinner at Le Cercle des Amities Francaises
Host: J. Harvey

April 6, Monday

A. Ahmadi, Presiding

Morning Program, Ministry Hall, Villa Street

9:30 Introductory Keynote Speech by Dr. Ahmadi

Welcoming Address by H.E. Majid Rahnema

Welcoming Addresses by Official Delegates
R. Mohajir K. Burian

Refreshment Break

Introduction of Delegates

IRANDOC activities, Department by Department
Administration and Business by A. Sinai
Reference by H. Daneshi
Processing by P. Etemadi
Publications by N. Moradi
Automation Activities by J. Harvey
TEBROC Activities by A. Mazaher

1:00 Luncheon for official delegates in the Minister's Private Dining Room

Afternoon Program, Institute Hall, Iranshahr Street and IRANDOC-TEBROC Building, Modiri Street

2:00 Open Question Period about IRANDOC

Tour of IRANDOC-TEBROC Facilities and Demonstration of Activities

April 7, Tuesday

A.R. Mohajir, Presiding

Morning Program, Institute Hall

9:00 PANSDOC and its Activities by A.R. Mohajir

A Note on the Status of Union Lists of Serials in Muslim Countries with Particular Reference to Pakistan by A.R. Ghani

Refreshment Break

Question Period about PANSDOC

The International Federation for Documentation: its Present and Future Program by A.R. Mohajir

Afternoon Program, Institute Hall

2:00 Facts and Fantasies Concerning the Policy by K. Burian

Introduction, History, and Aims of TURDOK by T. Olgun

Refreshment Break

Question Period about TURDOK Activities

April 8, Wednesday

Kismet Burian, Presiding

Morning Program, Institute Hall

9:00 Long Range Goals and Organization for Southwest Asian Documentation Centres by A. Sinai

Refreshment Break

Open Discussion of Possible Areas of Cooperation
- Lists
- Service
- Publications

Afternoon Program, Institute Hall

2:00 Continuation of Open Discussion of Possible
- Areas of Cooperation
- Staff Members
- Processing
- Hardware
- Goals
  - Specialization for Each Centre
- Information Science Instruction: Discussion of Courses Sponsored by IRANDOC PANSDOC TURDOK

Refreshment Break

Techniques of In-service-training

For April 1971 Meeting Choose
- Site: Karachi or Ankara?
- Sponsorship: CENTO
- Program Chairman
- Dates
- Hotel headquarters

The Smithsonian Institution by Stanley Kovy

Color Film Showing: "Battelle Memorial Institute Analysis Centre"

April 9, Thursday

Morning Program

9:00 Tour of Tehran Libraries
- National Iranian Oil Company Technical Information Department, M. Zarrin, Assistant in Charge
- Central Library, University of Tehran, Iraj Afshar, Director

Afternoon Program

2:00	Continuation of Tour of Tehran Libraries Centre for International Affairs Library, University of Tehran, Shahla Sepehri, Librarian Faculty of Education Library, University of Tehran, Farangis Omid, Librarian
5:00-8:00	Cocktail Party at the Ministry Hall

BIOGRAPHICAL DATA ON PARTICIPANTS

Official Delegates and Observers

BURIAN, KISMET, Director, Documentation Centre, The Scientific and Technical Research Council of Turkey, Ankara. Mrs. Burian earned her degrees from Ankara University and the Ministry of Health and Social Welfare. Formerly she was Assistant, Biochemistry Institute, Ankara University Faculty of Medicine (1953-54); Biochemist, Central Hygiene Institute, Turkish Chemistry and Food Control Department (1954-1962); Assistant Manager, Purchasing Department, Turkish Machinery and Chemical Industries Association (1962-1966); and Information Scientist in Chemistry and Chemical Technology, TURDOK (1966-1968).

DANESHI, DR. HOSSEIN, Assistant Director and Chief, Reference Department, Iranian Documentation Centre, Tehran. He obtained degrees from the University of Tehran, the Sorbonne, and the Paris College of Librarianship. Other course work was taken in France, Switzerland and Italy. Mr. Daneshi's career started as a teacher in the Tehran Public Schools, then he was a clerk, Personnel Department, Tehran Municipality, and finally Chief Librarian, University of Tehran Faculty of Agriculture, Karaj. His publications have dealt with French literature, library science and agriculture.

ETEMADI, PARICHEHR (Observer), Chief, Processing Department, Iranian Documentation Centre, Tehran. Miss Etemadi is a graduate of Pahlavi University, Shiraz, and the Graduate School of Library and Information Sciences, University of Pittsburgh. She is a member of the American Library Association. Formerly she was Assistant Librarian, Medical School, Pahlavi University.

GHANI, A.R., *Senior Bibliographic Officer, Pakistan National Scientific and Technical Documentation Centre, Karachi*. Mr. Ghani holds an M.Sc. degree in Physics and a Diploma in Library Science, Karachi University. Also, he studied in the United Kingdom under a UNESCO Fellowship. Since 1940 he has held library posts in India and Pakistan and has been Senior Bibliographic Officer of PANSDOC since 1957. He has published a bibliography of Pakistan (1951), and a retrospective National Bibliography of Pakistan, to be issued in six parts.

HARVEY, DR. JOHN F. (Observer), *Technical Advisor, Iranian Documentation Centre and Tehran Book Processing Centre, Tehran*. Mr. Harvey earned degrees at Dartmouth College, the University of Illinois, and the University of Chicago. Previously he was Dean, Graduate School of Library Science and Director of Libraries at Drexel University, Philadelphia, and Chairman, Department of Library Science, University of Tehran. Mr. Harvey is listed on *Who's Who in America, International Who's Who, Who's Who in Library Service,* and *Who's Who in American Education*. Among the professional societies to which he belongs are the American Library Association, American Society of Information Scientists, and the Institute of Information Scientists. His publications encompass library education, documentation, and library administration.

KOVY, STANLEY (Observer), Acting Director, Information Systems Division, Smithsonian Institution, Washington, D. C. Mr. Kovy is a graduate of the University of Scranton, and has done graduate work at American University, Washington, D. C. He worked formerly as Chief, Programming, Army Material Command, Washington, D. C. and Manager, Administrative Systems Group, Smithsonian Institution. Presently he is responsible for Smithsonian Institution data processing activity in (1) Administrative applications, payroll, accounting, supply, etc.; (2) Scientific applications--scientific research work; (3) Information retrieval applications--automation of national collections; and (4) Library applications--automation of library functions.

MAZAHER, ABBAS (Observer), Director, Tehran Book Processing Centre, Tehran. Mr. Mazaher has a B. A. degree in English from North Texas State University and in 1967 graduated from the same university in library science. Prior to his departure from the United States, he worked as Assistant Branch Librarian, Dallas Public Library. Since returning to Iran, he has taught at the Department of Library Science, University of Tehran, as well as directing TEBROC.

MOHAJIR, DR. A.R., Head, Pakistan National Scientific and Technical Documentation Centre, Karachi. Dr. Mohajir is a graduate of Osmania University in 1947 and received his doctorate from the University of Wisconsin, U.S.A., in 1951. He was appointed senior lecturer in the University of Punjab and University of Karachi where he worked until March 1958. At that time, he was appointed Senior Documentation Officer at PANSDOC and in 1960 was made Head of PANSDOC. Dr. Mohajir is a member of the Executive Council, F.I.D. He has served as UNESCO Consultant to the Institute of Standards, Tehran, in 1968, and to the National Council for Scientific Research, Republic of Zambia, in 1969-70 where he helped to establish a national documentation centre.

MORADI, NOUROLLAH (Observer), Chief, Publications Department, Iranian Documentation Centre, Tehran. Mr. Moradi obtained his LL.B. degree from the Faculty of Law and Political Science, University of Tehran. He worked for ten years in the editing and printing services of the Franklin Book Program in Tehran. Since 1968, he has been employed by the Ministry of Science and Higher Education and by IRANDOC.

OLGUN, TEVFIK, Information Scientist in Veterinary and Animal Sciences, Turkish Scientific and Technical Documentation Centre, Ankara. Mr. Olgun earned his degrees from Montana State University and the Faculty of Veterinary Medicine, Ankara University. Formerly he was Veterinarian and Sheep Breeding Specialist at several state-owned animal breeding farms. Since 1966, he has been in his present position.

SINAI, ALI (Conference Director), Director, Iranian Documentation Centre, Tehran. Mr. Sinai earned degrees at the University of Tehran and Queen's University, Belfast. He was formerly Librarian, School of Public Health, University of Tehran, and is now an instructor at the Department of Library Science, Faculty of Education. He is a Chartered Librarian and Associate of the Library Association and is President of the Iranian library Association, 1970-72. His interest in information science has led to publications and talks on topics relating to bibliography and documentation.

Other Speakers

Ahmedi, Abdol Rahim, Ph.D., Deputy Director, Institute for Research and Planning in Science and Education.

Rahnema, Majid, LL.D., Minister of Science and Higher Education.

Smith, Mervyn L., Dr. Sc., Secretary, CENTO Scientific Coordinating Board, Tehran.

Observers and Staff Assistants

Aboozia, Parvin, M.S.
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Shadman, Zahra, Lit.D.
Sepehri, Abazar, M.S.
Soltani, Pouri, M.S.
Tafazzoli, Mahin, M.S.

CONFERENCE RESOLUTIONS

The following goals were established for fulfillment within five years. Resolved

1. that special attention should be given to education for information scientists. Universities should be urged to include more information science courses in their library science curricula. The documentation centres should offer internship facilities to assist the universities.
2. that preparation of a cumulative union list of science, technology and social science regional serials is of the utmost importance.
3. that staff exchanges will be made on a short term basis. Such international organizations as CENTO, RCD, UNESCO, etc. should be approached for short term fellowships to support this project.
4. that short term regional documentation seminars should be held under CENTO auspices and in collaboration with CENTO member country experts.
5. that a common thesaurus on broad subject fields should be prepared by the three centres.
6. that a regional interlibrary loan code should be prepared.
7. that a Southwest Asian Documentation Centre Conference Secretariat be established at IRANDOC.
8. that a regional directory of research institutions should be compiled and published.

9. that a regional centre for duplicate exchange should be established.
10. that ten copies of all printed material published in each centre should be deposited at the other centres, and more copies be supplied on demand.
11. that facilities available at each Centre should be extended to all other centres with mutual agreement.
12. that CENTO should be requested to publish these conference proceedings and provide each centre with 100 copies.
13. that CENTO should be requested to support the second annual SADC Conference to be held in Karachi under PANSDOC auspices in February or March 1971.
14. that this conference wishes to record its gratitude to CENTO for the opportunity afforded the delegates of the three regional countries to hold the conference.

Supplementary Information

2. Each country should prepare its own science list, send it to IRANDOC and then IRANDOC should be in charge of completing the cumulative list. For the union list of social science serials, PANSDOC and TURDOK will provide IRANDOC with lists of libraries which have holdings in the social sciences. Then, IRANDOC will correspond with these libraries to obtain the details of their holdings.
5. TURDOK should be in charge of this project.

6. IRANDOC should be in charge of this project.
8. The Southwest Asian Documentation Centre Conference Secretariat will be in charge of this project and each country will be in charge of compiling its own directory.
9. The duplicate exchange centres' headquarters will be IRANDOC.

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